

**Compliance at Work:
Protecting Identity and Science Practice
under Corporatisation**

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Abstract

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When the New Zealand Government restructured the system of the public funding of research (1990-1992) it created Crown Research Institutes (CRIs) as companies operating in a global, market-led economy. One CRI, AgResearch, responded to this environment by corporatisation and instituted a normative system of control of workers which, through strategic plans, vision and mission statements, and performance appraisal processes, encouraged workers to adhere to company goals. This thesis, reporting on an ethnographic study of this CRI, shows how most scientific workers (technical workers and scientists alike) experienced insecurity through *estrangement* because the contributions they wished to make were less valued both in society and in their work organisation. They were excluded from participation in both organisational and Government policy-making, and felt they did not 'belong' anymore. Scientists in particular were also experiencing *alienation* (in the Marxist sense), as they were losing autonomy over the production of their work and its end use. Scientific workers developed tactics of *compliance* in order to *resist* these experiences and ostensibly comply with organisational goals while maintaining and protecting their self-identities, and making their work meaningful. Meanwhile, to outward appearances, the work of the CRI continued.

This thesis adds to the sociology of work literature by extending the understanding of the concepts of compliance and resistance in white-collar work, particularly under normative control, by developing two models of resistance. It adds to the stories of the impact on public sector workers of the restructuring of this sector in New Zealand's recent history, and develops implications for science policy and practice.

Keywords: compliance; resistance; identity; work; science practice; restructuring; corporatisation; normative control.

Prologue

This thesis aims to provide an understanding of scientists and scientific technicians and their work in a particular context and period in New Zealand's history, and to add to the theoretical understanding of resistance in the sociology of work.

The fieldwork for this research was undertaken in the years 1999 to 2000 in the Crown Research Institute (CRI), AgResearch, and as such involved the work of agricultural science researchers. That this fieldwork was carried out in this organisation was incidental, and came about through the researcher having worked there since its creation in 1992. Although the study was of AgResearch, the corporatisation of science in New Zealand and the 'new managerialism' more widely, has impacted on public good science and the public service across the board. To read this thesis purely as a critical examination of a single institution 'doing' science would be to miss the point completely.

All participants in this study have been given pseudonyms when quoted except where material is available through publications. The organisation and the science groups studied were not given pseudonyms as it was felt that the nature of their work was such that it was not easy to disguise. Hence when someone is quoted in this work their science group is not given to protect confidentiality.

Lesley Hunt

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Acknowledgements

When I started this study I wished the consequences of it to intrude and impact as little as possible on the everyday lives of those closest to me. I felt it was a very self-indulgent pursuit at a time in my life when I should have been contributing to saving for retirement. I thank AgResearch for three years on a generous scholarship and Lincoln University for a ten month scholarship. Their contributions meant that I was not a drain on the family finances until this last year. I am grateful for the Lincoln University Human Sciences Division's postgraduate funding system which enabled me to interview participants and go to conferences with limited personal expense.

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I am thankful to John Hay and John Lancashire, past AgResearch general managers. It is through Lanc's support of a woman of 'mature years' who was mad enough to think that she deserved an AgResearch PhD Scholarship, that this work happened at

all. John Hay acknowledged and expressed interest in my three monthly PhD reports – not a common feature of management as I describe later in this thesis!

This research could not have happened without the involvement of my former colleagues in AgResearch who became participants in this study. One person in particular kept me up to date with the gossip and tales about science and its relationships with the world outside AgResearch. The technical staff in the Wool and Skin Biology Group found themselves sharing an office with a social science student doing Master's level papers at Lincoln University. Suddenly they were expected to discuss the ideas of Foucault and other luminaries of this new world. They rose to the occasion well and I think we were all enriched. I appreciated the way in which this group in particular 'adopted' me, inviting me to attend special group occasions, and allowing me to follow their pursuits on the Winchmore Farm. The members of my other case study groups were generous in giving me such privileged access to their time and thoughts and I had a great time with them in my interviews. I appreciate the efforts of Viv Shortt, who I am sure often quietly smoothed the way for me, and enabled me to make the most of my time as a worker on study leave on the campus.

Last but far from least, I thank my supervisors. Bob Gidlow has been a dedicated supervisor. His encouragement of me through regular meetings and his insistence on written contributions which he turned around with remarkable alacrity made me aware of how fortunate I was to be in his care. His belief and confidence in my topic when I was filled with doubts was a great support. John Fairweather, probably unknown to him, delivered me challenges at points when I needed them. First there was his doubt that I could change from a quantitative to a qualitative perspective, and I thought, "I'll show him!" More recently he said, "This is a very good PhD. It would be an excellent PhD if you could spend another four weeks on it." I thought, "I want excellent." I think it was amazing the way Harvey Perkins often popped in to see Bob when I was there. He added his enthusiasm and gut feelings to my awareness that I was on to something. All of these people had a belief in me – that I could complete this task I had set myself.

I dedicate this thesis to John for his love, support and courage in being with a woman who insists on 'doing her thing'.

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Abbreviations

ACRI	Association of Crown Research Institutes
ANT	Actor Network Theory
CEO	Chief Executive Officer
CRI	Crown Research Institute
CORE	Centre of Research Excellence
DSIR	Department of Industrial and Scientific Research
E-Group	Endophyte Group
FRST	Foundation for Research, Science and Technology
GDP	Gross domestic product
GM	General Manager
HR	Human Resources
I to I	Invitation to Innovation - courses held in AgResearch from 1997
IP	Intellectual Property
ITS	Information Technology Services
MAF	Ministry of Agriculture and Fisheries (prior to restructuring this was the Ministry of Agriculture and Forestry)
MAF Tech	Part of MAF which carried out agricultural research before 1992
MBU	Molecular Biology Unit
MCG	Microbial Control Group
MoRST	Ministry of Research, Science and Technology
NERF	New Enterprises Research Fund
NSOF	Non-Specific Output Funding
OECD	Organisation for Economic Cooperation and Development
OSH	Occupational Safety and Health
PA	Personal Assistant
PCR	the polymerase chain reaction process used to multiply DNA
PGSF	Public Good Science Fund
RS&T	Research, Science and Technology
RSNZ	Royal Society of New Zealand
SEM	Senior Executive Meeting
SPL	Science Platform Leader
W&S Group	Wool and Skin Biology Group

Chapter 1: Introduction

It's actually quite good because 99% of the people in AgResearch hate AgResearch - meaning hate corporate - can't see any sense in what's going on. It's not just AgResearch. It's basically all the CRIs. You see any scientists in New Zealand and they'll bitch about their organisations. It's a great way to start a conversation! It's good because with the new corporate image we are supposed to talk about loyalty and loyalty isn't generated - you don't demand it - it's earned. And no-one's been around [long enough] to have earned anything. And they won't be. They will be gone in 5 years. So yeah, it's a good interacting point (Wade, scientist).

The past histories and traditions that practicing scientists carry with them as they move through changing research environments are creating the need for re-assessments of what it *means* to be working as a scientist in the 1990s ... This cultural perspective of the meaning of work presents both an historical and political story, but it is also a story of interaction (and power) between individuals and the institutions in which their work is embedded (Turpin & Hill, 1995: 182).

From 1990 to 1992 I worked as a biometrician in MAF Tech and then continued in that same capacity in AgResearch till 1998. (AgResearch, a Crown Research Institute (CRI), was formed in 1992 to service the research needs of the pastoral agricultural sector as part of the Government restructuring of the public funding of science, research and technology.) I was delighted when an opportunity arose for me to study AgResearch for my PhD. I had become fascinated by how the scientists and technical workers I worked with insisted that they loved their work yet complained about it so much. I had observed how dedicated they were to their work, how they gave it priority over all other activities in the workplace, and how it frequently dominated their lives. At the same time they said they were not happy. Tea breaks were frequently spent grizzling about the organisation they worked for. Why did these workers *do* nothing about their unhappiness? I was bewildered by this behaviour. I could not see what had changed for them since the advent of AgResearch - they appeared to be doing the same work they had always done, yet they had become unhappier about it. Ken (scientist) spoke of the change:

In the system we were in, the system in the past [Department of Scientific and Industrial Research (DSIR)], it was a competition for added resources, now it's a competition to be allowed to continue to work in the science. So the stakes are much higher.

The desire to investigate these questions has grown into this research: a study of the continuing impact of the restructuring of publicly funded science and technology

research on those who practice agricultural science research in New Zealand. The people under study are the scientific workers, both scientists and technical workers, in four science groups of AgResearch over the years 1999 to 2000 inclusive.

I wanted to concentrate my research on the ‘ordinary’ workers in the organisation who practise science, rather than the managers. The ‘scientific workers’ are the technicians, research associates, scientific officers, the scientists who may or may not be group leaders, and their next-in-line managers, the Science Platform Leaders (SPLs). I had become aware since 1997 that workers were being told to be ‘innovative’ through the strategic plan communications and in-house training courses, but from my own experience I thought they were already innovative. In my view, this demonstrated a lack of knowledge on the part of management about those who worked for them, which I, in my naïve enthusiasm, wished to correct! I also wished to study scientific workers and how they made their work meaningful - in keeping with Turpin and Hill (1995), quoted earlier - rather than studying scientific practice and the production of knowledge, which would have required more of a social studies of science and technology approach, such as Actor Network Theory (ANT). I also did not want to follow the Foucauldian technique of deconstruction which would have entailed embarking “on a project of estrangement from that identity by rendering visible the various costs involved in how we become ‘who we are’ ” (Knights and Vurdubakis, 1994: 188). I wanted to study people as subjects, not objects - as acting, not just being acted upon. I was mindful, here, of a review of a book on medical ethics (Zussman, 1992) in which the reviewer, Gershon (1993: 225), made the point that medical ethics have been argued in the abstract but no-one had studied how doctors actually make such decisions. Likewise, I wished to understand the meanings that these workers gave to their work, not the meanings senior managers gave to the work of science.

New Zealand Governments have restructured the public sector in order to encourage efficiency and accountability. In their science funding, Governments encouraged a private sector culture in which knowledge and information are seen as commodities for sale in the market place. These two developments have wide implications. A consideration of their impact on the scientific practitioners (who are supposed to be the source of the new knowledge and innovation on which New Zealand’s future

depends), is timely. As unhappy workers are unlikely to be productive, one would expect policy makers and managers to be interested in the causes of worker stress and dissatisfaction. There has been little attempt to pursue this (Lancashire, 2001: 9).

New Zealand is being observed with interest by other countries as it implements this private/business policy model on a previously 'public good' system of agricultural science research funding (e.g., Anderson, 1992; Pockley, 1995; Devine, 1995). I hope that in contributing to an understanding of the impact of this model on scientific workers and the practice of science, this research will be of international interest.

1.1 The research objectives

What is the purpose of this research? Is it merely to describe what I think is occurring or do I aim to change the way scientific research is organised in New Zealand? This dilemma is summarised by Michael Rose, and is recognised across the social sciences.

The social sciences always have been regarded as relevant to the problems of control. Social scientists themselves disagree whether they should intervene to further managerial control, or to produce a new social order, or simply log what events seem to be occurring (Rose, 1988: 14-15).

Out of my interests and with a concern for the above issues, I developed three objectives.

To identify, by focusing on observations of scientific workers and their descriptions of their experiences:

- The continuing impact on scientific workers (agricultural scientists and other related employees) of the 1990-1992 restructuring of the public funding of science research.
- How scientific workers make their work meaningful through this period of change in order to continue the practice of science.
- The ways in which a research organisation can assist scientists and related workers to practise science.

Within the confines of my approach an emergent objective became:

- To further the theoretical understanding of 'resistance' and 'compliance' in the workplace.

These research objectives will be achieved by an ethnographic analysis of four science groups in an agricultural science research organisation. This analysis involves:

- Interviews with workers associated with each science group, focusing on their work.
- Observations of meetings within the organisation, and collection of documents such as public statements, annual reports and company policy.

1.2 The structure of the thesis

This thesis is divided into four parts (see Figure 1.1). Part A sets the scene for the current research. In Chapter 2, I tell my story prior to this research to explain to the reader how I became interested in this topic and how I had such privileged access to the subjects of this study. Chapter 3 positions the research within the context of New Zealand's restructuring of the public sector, the agricultural scene, the system for the public funding of science, and studies of science practice. Chapter 4 describes the method used, the perspective brought to this study, the research process, and the organisation and groups involved in the study.

In Part B, I explore the meaning that work has for these workers (Chapter 5) and their responses to the changes caused by restructuring (Chapter 6), based on the data. Chapter 5 describes how scientific work produces opportunities for workers to belong to many different social groupings. This belonging and the accumulated feedback they get from it and from their actual work reinforces their ideas of themselves as doing useful, good quality, scientific research and helps them to see themselves as valuable and contributing parts of particular science groups, the science community and/or society. This feedback is a way of negotiating, reinforcing and protecting their self-identity in the social sense (e.g., Knights and Willmott, 1999; Giddens, 1991; Goffman, 1961a).

Chapter 6 discusses the ways in which these workers have responded to the changes in science policy and its implementation by their work organisation. The organisation has reacted to changing Government policy and its implementation through the Foundation for Research Science and Technology (FRST) by developing an organisational strategy. This strategy imposes claims on workers that are at odds with

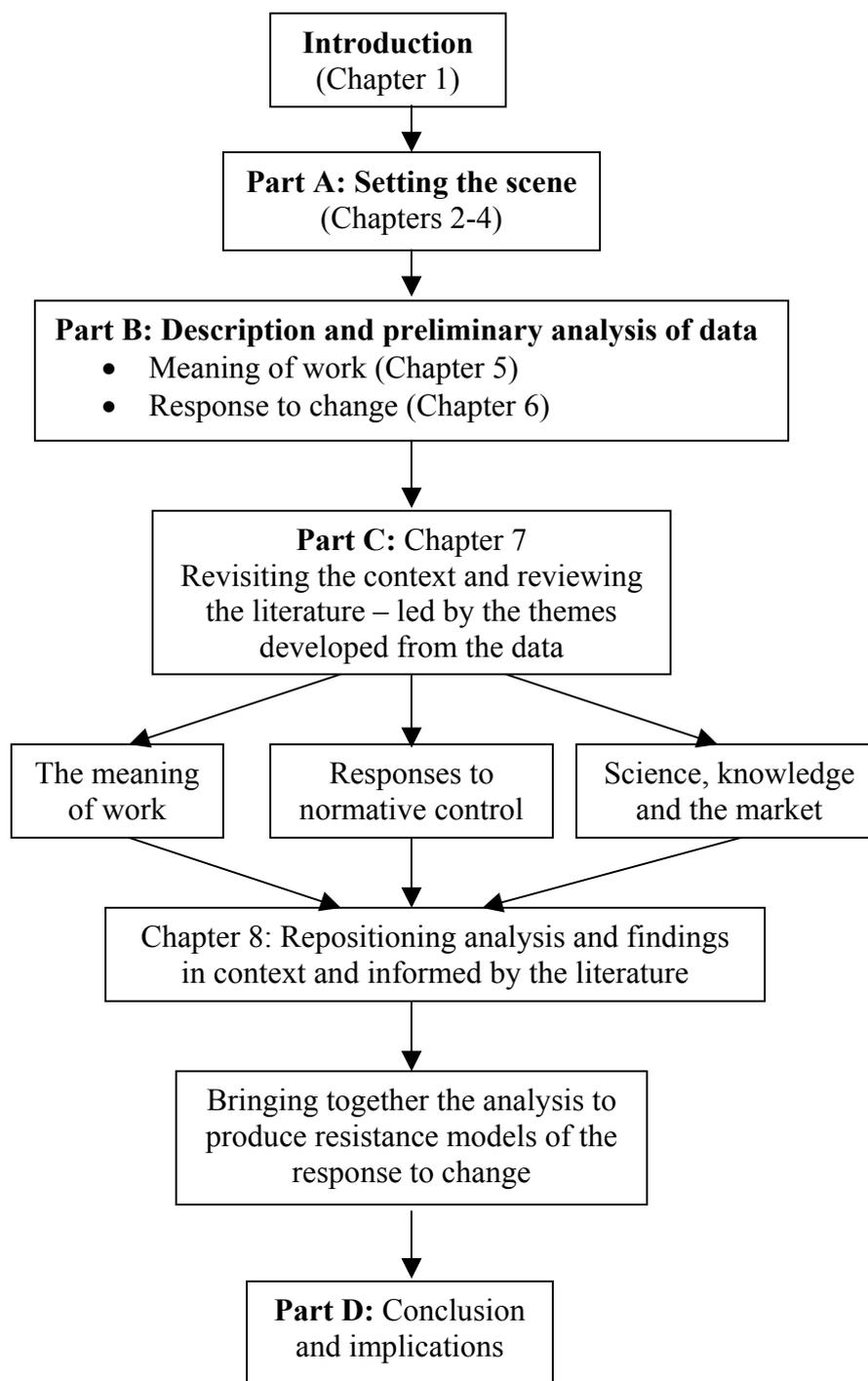


Figure 1.1 Thesis Framework

the feedback so positively regarded by scientific workers and described in Chapter 5. Change from restructuring threatens workers' security on all fronts. They risk losing their jobs and/or the work that is meaningful to them. They adapt to these challenges by attempting to incorporate some of the changes in science into their work practice

and valuing them. They attempt to resist the changes that challenge the good things about their work and the positive reinforcement work gives to their sense of self in order to continue to maintain and protect this self-identity. Resistance includes strategies that distance these workers from the claims of the organisation and the feeling that they are not valued by the organisation.

By emphasising their belonging to groups both within and outside the organisation that value them and their contributions, the workers gain strength to maintain a different identity from that claimed by the organisation. They are also able to place more importance on the work they do and seek ways of maintaining their work of science or getting more science done because that contributes to a part of their self-identity which they value.

Certain themes emerged from the exploration of the data in Part B. In following up these themes (Chapter 7, the first chapter of Part C), I focus on the sociology of work literature, rather than science and technology studies, or the management literature. The sociology of work literature seems more relevant because it deals with the way work is controlled and worker responses to these forms of control. It relates more to how workers make work meaningful and the relationships between work and identity. In contrast science and technology studies are concerned with how knowledge is produced, while the management literature focuses on how to manage workers whereas I am interested in the impact of management on workers. The sociology of work literature introduced me to a system of work control called 'normative control' whereby organisations try to shape the beliefs and identities of those who work for them. This fits my observations in AgResearch. The success of this management system has been challenged mainly in the Labour Process literature with accounts of worker resistance to such systems of control. Several writers have also contributed models of workers' responses to different forms of control. I am encouraged to place these issues of work and identity in a global context by this study of the literature. What is happening in the world of work? How does this relate to the practice of science? How does this reflect changes in society?

In Chapter 8 I discuss how, by bringing together the literature and the broader context, I am able to consider the study in a new framework, that of a boundary

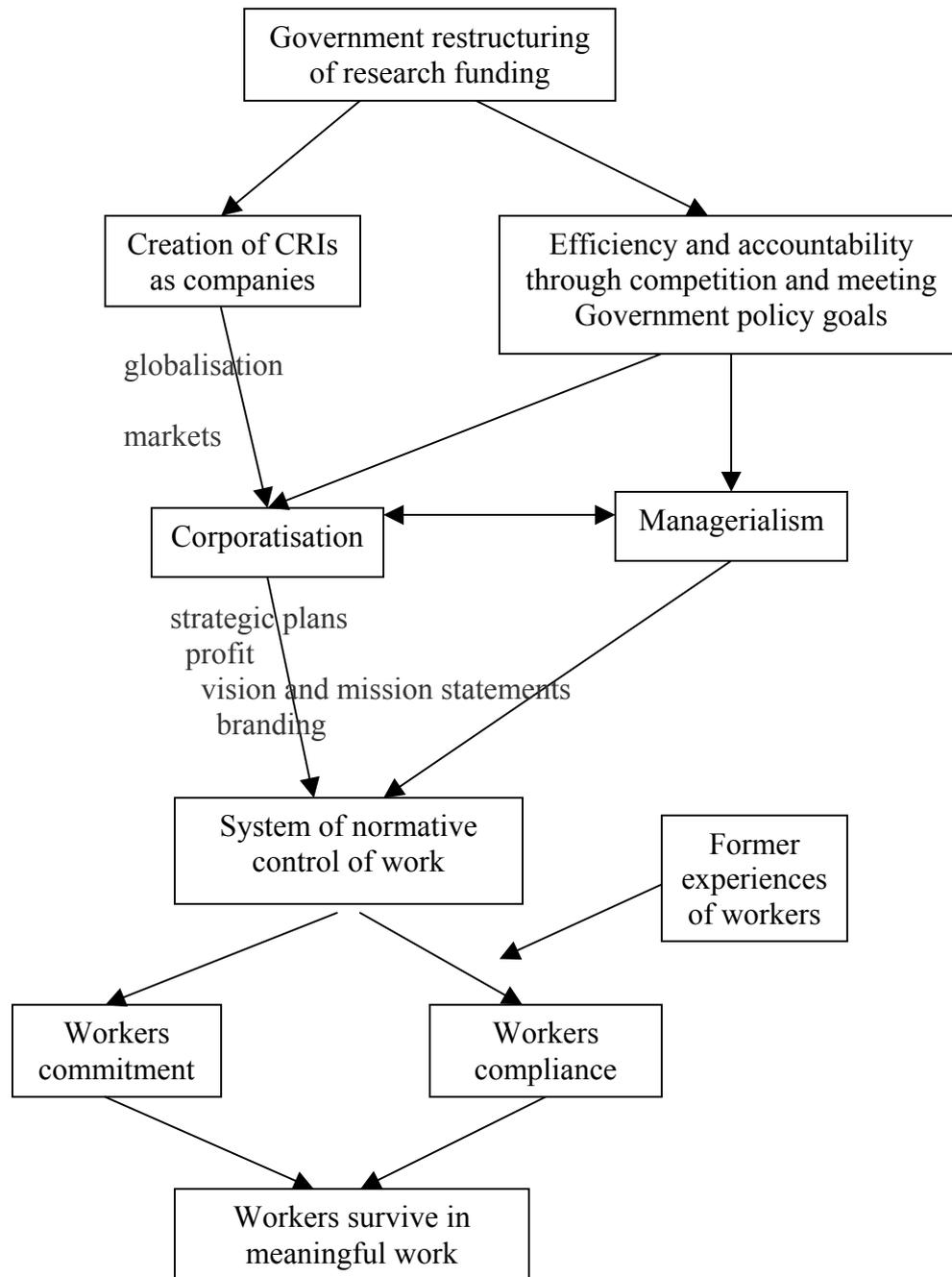


Figure 1.2 Simplified diagram of findings

struggle in which the world of science is struggling against the claims of a world that values only money and all its associations (business, consumerism, the market, profit etc.), and managerial or bureaucratic power. In this context, individuals as workers

can be pictured as engaged in a boundary struggle over identity: what it means to them to be scientific workers is in conflict with these ‘market-place’ values. To survive in this context they develop a system of compliance which enables them to continue in work that has meaning for them, while the organisation continues. (See Figure 1.2.)

Part D summarises the findings and, mindful of the research objectives, considers the implications of this thesis for theory in the sociology of work, and for Government policy on science and research in New Zealand.

1.3 Some conventions

Throughout this thesis I conform to the practice of using ‘they’, ‘their’ or ‘them’ with a singular meaning to avoid the use of ‘she/he’, or ‘her/his’, or ‘her/him’. I use a generic expression, ‘scientific worker’ or ‘worker’, to cover anyone in the organisation who works in science and I have differentiated between scientists and technical workers when necessary to my argument. I do not use the word ‘technician’ because most of the technical workers I interviewed were actually of a higher grade than technician. They had the occupational labels of ‘scientific officer’ or ‘research associate’. The word ‘technician’ was regarded as a somewhat derogatory expression, symbolising a more menial occupation. ‘Staff’ is used to apply to any employee in the organisation, not necessarily a scientific worker.

In quotations I have used the author’s spelling of certain words which may not be consistent with mine. For example, the word ‘organisation’ may appear as ‘organization’ in many of the quotes and ‘behaviour’ will be spelt as ‘behavior’ if it is from an American source. Italics used in quotations are those of the author/s. I sometimes use a quotation at the beginning of a section to set the scene or at the end to summarise it. All abbreviations used are listed at the beginning of the thesis.

1.4 Conclusion

This introductory chapter has briefly situated this thesis in the context of the restructuring of public funding of scientific research in New Zealand and stated the research objectives. I have outlined the structure of the thesis and some of the conventions I follow.

PART A: SETTING THE SCENE

In the next three chapters I paint a picture of the setting of this thesis to facilitate the reader's understanding of the rest of the thesis while making my own position clear. In Chapter 2 I explain how I was able to have access to the agricultural research organisation AgResearch to undertake this research. Chapter 3 situates the research in the New Zealand context by describing the restructuring of the public sector undertaken from the mid 1980s through to the early 1990s, the agricultural scene through this period to the present, and the changes in the system of allocation of public funding to scientific research. To this I add a brief consideration of the science scene. Chapter 4 outlines the ethnographic method and how this methodological approach fits with my perspective and the aims of this research. It also describes the research process in greater detail and provides information on the organisational structure of AgResearch and the four case study groups.

PART A: SETTING THE SCENE

Chapter 2: My story

I wish to tell my personal story of the changes in this Crown Research Institute (CRI), AgResearch, the organisation in which I was previously employed. This account may explain why the behaviour of scientific workers started to intrigue me and became the basis for this study. As successive Governments embraced the desire for a ‘knowledge economy’ I could see the relevance of this interest in scientific workers. If research organisations and their employees are supposed to lead the way in the implementation of this policy, their well-being and productivity would surely be of interest to the organisation, Government and the science community.

In 1990 I joined the staff of the Ministry of Agriculture and Fisheries Technology section (MAF Tech) on its Lincoln Campus as a part-time biometrician. In July 1992 it was confirmed that I had become part of the newly formed AgResearch, one of the three CRIs formed to service the primary sector’s research needs as part of the Government’s restructuring of the public sector.

In early 1997 AgResearch decided to put all workers through an ‘Invitation to Innovation’ (I to I) programme conducted by two Australian academics and consultants, Drs John Edwards and Jim Butler. The focus was “on professional growth and innovation within a constantly changing environment”¹ and it was to last for three years. Phase I introduced participants to the ideas of the ‘6 hats’ (de Bono, 1990), ‘learning organisations’ (Senge, 1990), and the ‘7 habits of highly effective people’ (Covey, 1989), etc. At the first three-day workshop the attendance faded as workers said they were too busy, and many workers listed as attending did not make an appearance. The main comments from participants afterwards were about how good it was to get to know people on the campus from other science groups, which illustrated their relative isolation. Some found the personality typing interesting, particularly when those present were divided into the four main personality types according to the Myer’s Briggs Inventory (Keirsey & Bates, 1986). When the lab

¹ Handout before the Phase I programme in 1997.

staff looked across the room they saw their bosses – scientists and group leaders - on the opposite side. The other two groups had very few people in them.² This drew attention to the essential dichotomy of the types of people who worked in AgResearch. The lab and technical workers tended to be interested in accuracy, thoroughness and order. They were practical and conscientious. The scientists on the other hand tended to be sceptical, critical, independent and interested in ideas – often arguing for the enjoyment of it.

There was a noticeable change in the information handed out prior to Phase II in 1998 compared to 1997. The aim was “to be the best via our people”. It was to be a way of assisting employees to see where they fitted in the company and

to align themselves better to the latest developments in the AgResearch strategy. Business opportunities and benefits are generated from innovative thinking and are much more likely to occur given a supportive work environment. I to I assists the organisation to provide a positive environment where ideas and creativity can flourish Our company will look very different in five years with the evolutionary shift from science achievement to science for technology and so the capabilities of our people must also evolve. If we are to be successful in changing our practice ... then we need to allow time and support for our people to grow. Guidance and direction from senior levels of the organisation has an important role in allowing this growth. This would ensure that we build capabilities through *targeted* professional development that will meet the changing needs of our business.³

By this stage the participation rate had dropped away even more with the senior scientists in the major campus groups not attending and not encouraging their workers to attend. Scientific workers seemed to feel that it had nothing to do with their core activity, the practice of science. This puzzled me very much at the time. It seemed that there was no acknowledgement by workers that good personal relationships, being self-reflective, or problem solving using different methods than usual, were at all relevant to their work. I was in no doubt that the methods introduced in the course would work. Workers were just not motivated to learn or use them. (This was also possibly the fault of the course because the skills concerned were taught out of context. Perhaps it would have been more effective if workers had worked on real issues within their work-related groups.) It seemed to me, however,

² The lab staff fell in the ‘SJ’ group and the scientists in the ‘NT’ group. There were a few ‘NF’s and only two ‘SP’s in a group of about 30 people. The ratios for an average population are SJ: SP: NT: NF – 3:3:1:1 (Keirseey and Bates, 1986).

³ Handout before the Phase II programme in 1998.

that the main reason for the low participation was the lack of buy-in by the high profile scientists on campus. This then allowed other workers to opt out because covertly their bosses did not support their attendance.

Around the time of the first 'I to I' courses, I remember a campus meeting at which the Board Chairperson, and the General Manager of the Sustainable Production Division, made a great show of the 'chappiness' between them, while Dr Kain, the CEO, appeared to be excluded. Soon after it was announced that Dr Kain was 'retiring' while remaining on the AgResearch Board as a director.⁴ In mid 1997 a new CEO, Dr Keith Steele, was appointed. He had worked for the Ministry of Agriculture and Fisheries (MAF) earlier in his career but more recently had been managing research institutions in Australia. Soon after his arrival he travelled the AgResearch campuses presenting the strategic plan. This was news to workers. We were unaware that AgResearch had a strategic plan, but as the 'Statement of Corporate Intent' it had been part of the Government requirements of CRIs since their inception (New Zealand Pastoral Agriculture Research Institute Limited, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999). (The shareholding Ministers of the Crown have to approve it each year – see Section 3.3 later.) Up till then it had been regarded as unnecessary to involve workers in its compilation or to tell workers about it. At this presentation the CEO announced that he did not want to be a 'power and control' manager. He wanted workers' involvement in organisational decisions. With this in mind he asked for volunteers to be part of the strategy implementation.

I thought that this was a great idea. Here I was working in an organisation full of recognisably intelligent people. (CRIs must have the largest proportion of PhD-qualified workers of any organisation in New Zealand.) I felt it was important that this source of talent was tapped by the organisation. So with great enthusiasm I signed up and was surprised to find that very few other people had done so. Those who had volunteered on the Lincoln campus were brought together and two were selected to go to a national meeting to form this Strategic Implementation Network (SIN). I was somewhat bemused to find that the Human Resource staff member decided who these two were. I was not one of them. The agenda was not transparent,

⁴ He then worked for Lincoln University so obviously did not wish to 'retire' from working altogether.

but I expect that science staff were a first priority and biometricians, though classified as scientists, did not really fit, though this was never stated. However, at the last minute the scientist chosen could not go and I went in his place. The other representative from Lincoln alternated between a research associate and the business manager. The other people who had expressed an interest were members of the support staff. There was a significant lack of interest from science staff.

A young woman was seconded from her position as a business manager to facilitate this network. An Auckland consultancy company was employed to assist her. Considerable company resources were set aside for this network as it involved flying campus representatives to regular meetings as well as paying consultancy fees.

The network meetings were a revelation to me. The aim was to set up campus meetings to work out how to implement the strategic plan and to get ready for preparation for the next year's strategic plan, but I could not understand what was going on and why it seemed to take so much time and energy to do what, to me, seemed to be so little. The consultant talked in a jargon I could not understand and I have never come across so many acronyms – before or since. He produced complex flow charts to express how decisions were to be made and all the processes which were to be followed. Of the representatives from the five major campuses, two were MBA qualified scientists and one a business manager. These three gentlemen would frequently be in competition over who was going to draw complex diagrams all over the white board. Our facilitator was able to join in these discussions but the rest of us were completely disenfranchised. Our team on the Lincoln campus duly set up discussions with various speakers. The organisation of these events was to be documented in such a way that we were accountable and able to reflect and learn from what we had done, so a remarkable number of forms were created to facilitate this purpose. They had to be completed before and after each event and sent off to the national facilitator (never to be seen or heard of again).

Over several meetings there were long discussions on what the network should be called. A group on the Ruakura campus had objected to the acronym SIN on religious grounds. It was finally decided to call the group Green to Gold, with the implication that we were turning green pastures into money. This became the

accepted name in spite of the objections of the pastorally-minded science staff on the network. To them the name implied green grass being replaced by yellow grass, which meant either drought or not enough nitrogen! It was interesting to note that this perception was not considered important by the other members of the group in what was supposedly an agricultural science oriented organisation. This motto was used as a feature in the annual report and the strategic plan of the following year. It featured a sun just rising over a dark green hill. There was considerable debate about whether the sun was rising or setting, particularly as pastoral, commodity producing, industries were being described as ‘sunset industries’ at the time!⁵

Though the Green to Gold network faded away after a time it did achieve several things. First, everyone knew about the strategic plan. Second, it was suggested that campuses would appreciate more contact with corporate staff and more knowledge about what was going on in the organisation. As a result each campus was to receive monthly visits, when someone from corporate reported on the Senior Executive Management meeting (SEM). This campus meeting was called the Team Brief.⁶ Third, the CEO instituted a newsletter called the CEO’s Update, which he distributed by email whenever there was something he wished to inform staff about.

After a while my part in the network seemed to be to keep the committee informed of what the ‘man on the ground’ was thinking about the organisation, and this role was respected by the national facilitator who acted as the one person on whom the CEO could rely for information about the grassroots of the organisation. (It is noticeable that he no longer has anyone in this capacity.) Another role I had was that of the go-between with one of the GMs⁷ to try to make the organisation into ‘One AgResearch’ as we called it. This never really eventuated because the GM concerned was too busy! I had many ideas but felt it was no use pursuing them on my own without support, nor putting myself at risk by not doing the work I was paid to do.

⁵ These comments by scientific workers are a good example of the way they ridiculed corporate decisions and hence were able to distance themselves from the organisation (see Chapter 6).

⁶ In 2001 these visits to the Lincoln campus ceased as staff told corporate unless presentations improved they were a waste of time. In 2002 there have been fewer CEO Updates as well, so the Lincoln campus now has little direct communication with corporate management, apart from the annual strategic plan presentation.

⁷ The organisational structure of AgResearch will be discussed later (Figure 4.1).

The local campus committee, for which I became the organiser for lack of other volunteers, conscientiously tried to run campus meetings to discuss aspects of the strategic plan. We worked hard to get key people on campus involved but it never became an accepted part of campus life. AgResearch as a whole ran a 'virtual conference' on the email system to get ideas about the next strategic plan but there was a very low participation rate. Staff said they were too busy. I was beginning to develop an awareness that I was working on a dead issue and spending time on it when I should be doing other work. By this stage (mid 1998) I had commenced pre-requisite study to my PhD, and was no longer in paid employment, but had been awarded an AgResearch PhD scholarship. I indicated that unless I was paid to do this work I would not continue. This was not agreed to and the campus committee ceased as no-one else on campus really owned it enough to make sure it happened. The national coordinator's job ran out and she went back to her work as a business manager.

The MBA qualified scientists and business manager who were part of the Green to Gold Network have since left the organisation for richer pastures. Even though AgResearch did give them short-term work there was probably no place for them as there were few positions in the organisation outside science-related ones at the level to which they would have aspired. (See Figure 4.1: Organisational structure.)

I could not understand why scientific workers were not embracing what I felt were good workable ideas. What was going on here? As can be seen above, I developed various explanations for this behaviour.

More questions were to come as I observed how cynical workers were about the strategic plan. They considered that if they did contribute, no-one would take any notice anyway. I wondered why so many groups of workers did not attend the Team Brief meetings. Why did they prefer to continue their research work rather than learn about what was going on in their organisation? Why were they so passive about presenting their views, continuing to grizzle rather than doing anything about their perceived grievances? Was this cynicism just part of being involved in science and related to the scepticism seen as a valued quality for those in science? The more I

thought about it the more my questions grew and have continued to grow throughout this research.

At the beginning of my study I thought the major concern of scientific workers would be intellectual property and the commodification of knowledge. When I started talking to people I quickly discovered that this was not an issue at all. Staff were worried about something much more mundane but of much more consequence – their survival. They were not only concerned about losing their jobs but also about how their work would change in the future to fit the organisation's strategic direction. Would they still want to do it? This was of particular concern because they felt their jobs were important and it was work that they loved. Even interest in career advancement was not a primary concern. There was no interest in progressing in a job that might not exist in the future.

From mid 1998 I became an 'employee on study leave'. As the recipient of an AgResearch scholarship I was allocated office space on the Lincoln campus and I was free to become a participant-observer within the organisation. In early 2000 I became aware that I was not going to complete the PhD in two years and asked for an extension of the scholarship for a year. Towards the end of the year I was told that this was not possible and that AgResearch wished to break the scholarship agreement, an agreement which had incorporated the promise of employment. All those who had supported me in my PhD study had now left the organisation, and there was little I could do but accept this arrangement, leaving at the end of January 2001. In a sense this outcome was a gift to me. It made 'exit' from my research site easier than I had anticipated based upon the literature (Shaffir and Stebbins, 1991: 207-255).

In conclusion, I remain immensely grateful to AgResearch for giving me this opportunity, as a mature student, to conduct this study, which gave me such privileged access to a particular organisational environment.

PART A: SETTING THE SCENE

Chapter 3: Context

In this chapter the contexts of this research are outlined in order to situate this work in a particular time and place in New Zealand's history, and in the history of science. I describe the restructuring of the public sector within New Zealand, the role that agriculture has played within the national culture, the restructuring of the public funding of research, particularly the establishment and development of the CRI, AgResearch, and, finally, the practice and organisational context of science.

All research is situated in an actual context. This has a powerful impact on what is being observed, described and analysed. As Rose (1988: 5) states:

... by looking at how people have explained work behaviour over the last hundred years we are led to consider the dynamic relationship between economic conditions, events in workplaces (their politics), and powerful ideas It also highlights the danger of assuming that there may be any simple explanation, good for all times and all places, to apply to social behaviour.

The relationship of actions to context is often unacknowledged by observers (particularly those technocratic thinkers who claim impartiality) according to Rose (1988: 36; 1978[1975]: 42) and helps account for the complexity of action and actors' interpretations of their actions. Giddens (1989[1984]) also acknowledges the importance of taking account of context.⁸

3.1 Context 1: Restructuring in New Zealand

The 1984 Labour Government embarked on a process of restructuring the public sector in its second term (1987). The incoming National Government continued this after 1990. This restructuring process aimed, broadly speaking, to separate funding, delivery of services and provision of policy advice to Government. It was believed that this would encourage efficiency through competition, and provide more freedom of choice to consumers of products or services formerly provided by Government departments. 'The New Zealand Experiment' (Kelsey, 1995), as this reform has become known, has seen New Zealand change from one of the most highly regulated

⁸ This acknowledgement may be indicative of a change in attitude by social researchers. Rose does not mention it in his 1978 edition of the same book.

and socially integrated democratic systems in the world, to one of the most highly de-regulated and market-led (Boston, Martin, Pallot & Walsh, 1991).

New Zealand's public sector reforms were designed by economists and policy analysts and took a radical form (Nagel, 1997: 349), described as the "New Public Management" (ibid.: 350).⁹ Observers saw this as "another manifestation of New Right, free market ideology", with origins in such ideologies as public choice theory (ibid.: 354). Since 1993 there has been a movement from 'outputs' towards 'outcomes'.¹⁰ Hill and Turpin (1994) imply that the 'new managerialism' is not just about efficiency and accountability but aligns with a shift in the decision making structure and hence in "the very culture of knowledge production" (ibid.: 348). This

... 'enterprise' culture has come to mean the managerialist culture that emerged [in Britain under Margaret Thatcher] as public institutions were constrained to reorganize to abide by market conditions. At a structural level this has meant de-differentiation of previously distinct modes of organization, introduction of more 'corporate' management structures, flexible employment contracts, new forms of financial control, strategic planning and so on (ibid.: 350).

It marks a change from results which could be organisationally controlled to an emphasis on supposed social values and strategic management based on central government policies (Boston & Pallot, 1997).

Australia has followed a similar path to New Zealand, but differs in an important way: New Zealand relies on formal contracts¹¹ as accountability mechanisms, whereas Australia has put more emphasis on trust and consensual relationships (Campus & Pradhan, 1997). From his thinking about 'The New Zealand Experiment' Nagel (1997: 355) concludes by asking two questions:

Does the New Zealand system's promotion of unequivocal goals, clear feedback about performance, and reinforcement of achievement with material rewards provide the preconditions that enable strong leaders to create purposive, cohesive organizational cultures? Or does its distrustful view of human nature, overemphasis on formal contracts, and creation of transient relationships, detract from the long-run maintenance of a responsible, committed public service?¹²

⁹ This was of sufficient interest internationally for the *Journal of Policy Analysis and Management* to produce a volume in 1997 dedicated to a discussion of these reforms in a global context.

¹⁰ When 'relevance' started being a feature in FRST policy.

¹¹ For example, FRST makes contractual arrangements with research organisations after a competitive bidding process.

¹² There is a question here about whom he is talking. Is it managers or workers? With the emphasis on 'material rewards' it would imply that it is managers but this is contradicted later. Workers have not benefited materially from the implementation of this restructuring.

Much has been written about this period in New Zealand's history. I have given only a very brief summary of the available literature in order to set the scene. Now I move on to a similarly brief consideration of the place of agriculture in New Zealand.

3.2 Context 2: The agricultural scene

In New Zealand's recent past, agricultural primary products have been acknowledged to be the source of the country's wealth and security (Brooking, 1996), and those associated with agriculture used to play an important part in New Zealand society. To be 'helping' agriculture was to be 'helping' the nation.¹³ It was accepted that the knowledge gained from agricultural research should be freely available to farmers. In 1984, when the Labour Government came to power, this attitude to agriculture changed and subsidies were quickly removed (Hawke, 1992: 441). Later, the work formerly carried out by MAF extension officers became subject to 'user pays',¹⁴ under the auspices of 'Agriculture New Zealand', a Government owned company expected to be financially viable through its own commercial revenue. Final privatisation occurred in 1995¹⁵ with the purchase of Agriculture New Zealand by Wrightson Limited (Journeaux, 1998). As MAF reported in 2000:

Over the past 15 years farmers have had to adjust to the removal of subsidies and the deregulation of the economy. Sheep and cattle numbers have fallen 24% from the peak in the early 1980s. This indicates the extent to which farmers were "farming for subsidies", often unsustainably, rather than producing the type and amount of product that the market required (MAF, 2000: 25).

The impact of these changes can be seen by examining New Zealand's exports by trade sector. There has been an enormous drop in the relative importance of agricultural products and a rise in the basic manufacturing sector. Land-based

¹³ "... the notion of farmers as the 'backbone of the country' dies hard" (Hawke, 1992: 420).

¹⁴ According to Simpson and Craig (1997: 71) this system was "ill-conceived" because "there was little incentive to succeed ... since any revenues generated were returned to the consolidated fund rather than to the area of science involved." Also there was "the mounting inability of users to pay" because of the economic stagnation at the time. Later they say (ibid.: 76), "The 'user pays' system of cost recovery actually served to increase the distance between science providers and industrial end-users rather than bringing them together in productive collaborations". They do not say exactly how this occurred but imply that it was because of the market principles of neo-classical economics.

¹⁵ 1994 according to Paine (1997).

products that made up around 80% of exports in 1973 made up 53% in 1996 and the range of such products has broadened (Le Heron & Pawson, 1996: 136).¹⁶

There has been a strong message to the research community accompanying these changes. Agriculture is no longer central to Government thinking. For example, the last National Government (1996-1999) had a ‘Minister of Food and Fibre’ rather than a ‘Minister of Agriculture’. Ironically, the present Labour Government, which has traditionally represented the urban members of society, resurrected the ‘Minister of Agriculture’ title. The future of New Zealand’s economic health is seen to lie in the ‘knowledge society’ and agriculture is not promoted as an important part of this, except as a spin-off for biotechnology (Maharey, 2000; Hodgson, 2000a, b, c, d and 3).¹⁷ With its link to research and development, science is seen as the way forward for New Zealand’s economy.¹⁸ The Minister of Research, Science and Technology indicated his Government’s policy in a speech which included the following:

Transformation means moving New Zealand beyond its traditional dependence on the primary industries for the generation of wealth. We are extremely good at primary production and processing. It is a vital part of our future and we continue to post remarkable productivity increases. But it’s not enough wealth is increasingly taking the form of knowledge rather than stuff (Hodgson, 2000a: 1-2).

The allocation of public research funding reflects this declining emphasis (e.g., Science Priorities Review Panel, 1995: 22). FRST states in its *Investment Approach for Economic Innovation and FRST Investment Change Process* document:

The Foundation will progressively shift its research portfolios from mature areas of commodity cost-reduction activities towards RS&T that underpins high value-added export industries (FRST, 2000: Section 1, p.2).

Where research primarily underpins the achievement of efficiency gains in undifferentiated commodities ... [it] will be targeted for disinvestments ... (ibid.: Section 2, p.3).¹⁹

¹⁶ In 1999 agriculturally based exports accounted for 54% of total exports and 15% of GDP (MAF, 2000: 6).

¹⁷ ACRI (2002: 13) stress the need for research to build on New Zealand’s “existing strengths [which] lie in the nation’s human capabilities and competencies, the natural advantages of industry and land-based activity ...”.

¹⁸ The incoming Minister of Research, Science and Technology stated: “I want to assure you that, at last, you have a Government that is on the side of science. We understand that science and technology are crucial to our economic future” (Hodgson 2000e: 1).

¹⁹ Jessop, in his 19 September 2001, lecture at the University of Canterbury, *Restructuring of the Welfare State*, said that in Germany the State supports R&D that makes sure its most internationally competitive industries remain that way. (This compares unfavourably with New Zealand where support is going into areas in which New Zealand does not have such expertise already.)

Research organisations are developing new strategies to maintain or increase their research capabilities and their funding. Scientists within these organisations are asked to focus research on commercial products or processes that preferably can be patented and licensed, and have an international as well as a national market. There is a general movement away from an emphasis on primary production and the use of the word agriculture because it is seen as limiting the possibilities for future research. The emphasis is on research being able to make a contribution to any part of the eco-commodity chain or agri-food sector.²⁰ Hence words like ‘commodity’ and ‘production’ have disappeared from research proposals as researchers attempt to indicate that their work no longer has the aims of increasing efficiency and productivity in the primary sector. In order to align itself with this trend, AgResearch stated that it is serving “New Zealand’s food and fibre industries” (AgResearch Science, No.16: 2), omitting the words, ‘agriculture’ and ‘science’. It is no longer an ‘agricultural research institute’ but a ‘life sciences company’ (AgResearch Strategic Plan 2000-2003; 1999).²¹

The irony of these moves is that the agricultural industry had a boom year in 2000 to 2001, demonstrating how important it continues to be to New Zealand’s economic wellbeing (INFOS Database, Statistics NZ, 2001).

3.3 Context 3: The restructuring of publicly funded science

A perception that scientific research lacked accountability was reflected in New Zealand from the 1970s on by Governments’ increasing emphasis on encouraging private sector involvement in R&D (Palmer, 1994: 8). New Zealand does not have a good record of such involvement compared with other first world countries (MoRST, 2002; McKinsey, 2002).²² Governments wanted to restructure the way public research funding was to be allocated (Palmer, 1994) in line with the restructuring of the public sector described earlier. The 1990 National Government implemented the

²⁰ This is also seen in Australia and Canada (Falvey et al., 1995).

²¹ The Association of Crown Research Institutes (ACRI, 2002: 13) uses the word “agbiotech”.

²² Lancashire (2001: 2) in his paper at the Royal Society of New Zealand (RSNZ) sponsored *Bio-science to bio-enterprise to bio-business* (B2B2B) conference, thinks it is time the heat was turned up on New Zealand’s private sector. They should be asked why they do not invest in R&D. He points out that there has not been a great attendance from this sector at the many meetings around the country to work out how to get business and science working together. The latest statistics (MoRST, 2002) indicate that New Zealand’s expenditure on R&D actually deteriorated between 1998 and 2000. The business sector’s expenditure fell to 20% of the OECD average when compared with GDP.

final separation of what it felt to be conflicting interests by forming in 1990 the Ministry for Research, Science and Technology (MoRST) and the Foundation for Research, Science and Technology (FRST) to provide policy and be responsible for the allocation of the Public Good Science Fund (PGSF), respectively. They were followed by the formation of ten Crown Research Institutes (CRIs) in 1992.²³ Each CRI was to represent a particular sector of the economy and was able to act as a company under the *CRI Act 1992*, with their shareholder, the Government, represented by the Minister of CRIs and the Minister of Finance. Governance was to be carried out by Government selected Boards of Directors.²⁴ Each CRI was to contract research from FRST according to Government approved priorities formulated by MoRST. This “corporate model gives CRIs legitimacy in an environment where accountability and market responsiveness are highly valued” (Simpson and Craig, 1997: 76). CRIs are expected to demonstrate “... an adequate rate of return on shareholders funds” (*CRI Act 1992*, Section 5.3(a)). The Statements of Corporate Intent (New Zealand Pastoral Agriculture Research Institute Limited, 1993 – 2000) assert that it is left to the discretion of the shareholding ministers whether the profit left after tax is returned for reinvestment within the CRI or whether there is a dividend paid to the shareholders.²⁵

Lancashire (2001: 3) argues that since the Department of Scientific and Industrial Research (DSIR) was founded there has been a strong message that “government funded science was to serve the country’s economy” but “despite these economic imperatives basic, curiosity driven long term research was carried out” (ibid.: 4). This was probably because DSIR was founded on what was known as the ‘Haldane Principle’ or “the separation of research from administrative departmental control” already “enshrined in British governmental practice” (Galbreath, 1998: 19). Such opinions about the purpose of science research continue to be voiced: “The driving

²³ The tenth CRI was the New Zealand Institute for Social Science Research and Development Ltd, which was disestablished in 1994 (Simpson and Craig, 1997: 77).

²⁴ This “design reflects the corporate governance model with management held accountable to shareholders” (Simpson and Craig, 1997: 75).

²⁵ The Government called on this dividend for the first time in 2001 to set up a venture capital fund. One of the shareholding Ministers, Pete Hodgson, the Minister of CRIs, said he had become aware that some of the CRIs had invested in Government bonds and not in any risky ventures with their own science R&D (Radio NZ, National Programme, Sunday AM, 26 May, 2002). What he did *not* say was that AgResearch, for example, had been unable to use this money for high risk investment because the shareholding Ministers (via Treasury) would only allow investment in R&D that produced good returns within three years (Meeting with AgResearch Board Chair, Brent Layton, Lincoln, 24-3-00).

force behind the changes is the belief that properly directed science can prop up the New Zealand economy The Government calls it “public good research” ” (Anderson, 1992: 12).

In the past, scientists did not have to worry about management or business. Simpson and Craig (1997: 71) describe the traditional model of scientific inquiry as one in which scientific workers are “free to explore questions that stimulate their curiosity” though they do admit later that in New Zealand, the “DSIR and other agencies were responding to some of the country’s needs for scientific innovation (for example in the agricultural industry). They were not driven purely by curiosity...” (ibid.: 74).

The CRIs were to be responsible for the intellectual property they produced, with an understanding that this was to be commercialised by the private sector except in special circumstances: “before any overseas sale of intellectual property occurred, New Zealand industry must be offered the first right of refusal and decline to uptake the property” (Palmer, 1994: 40). Each CRI has had to make the decision whether to remain dependent on public funding for its work or whether to complement this by seeking funding elsewhere. These extra resources could come from commercial contracts, by gaining income from the licensing of products or processes in the local or international market place, and/or by the sale of such products or processes. Such decisions may come into conflict with Palmer’s assertion above. AgResearch, for example, has decided that in order to retain present workers, and to develop further capabilities as a quality research organisation, it needs to become increasingly funded from commercial sources. Its aim is to have 33 percent of its revenue originating from the PGSF by the year 2003 (AgResearch Annual Report 1998: 33). This is also seen as freeing it from its research directions being dominated by Government policy, via MoRST.²⁶

When the CRIs were first formed, scientists expressed a great concern about the lack of consultation concerning the form restructuring was to take (Evison, 1993; Lovett, 1994). In 1994 the New Zealand Association of Scientists (NZAS) carried out a large

²⁶ AgResearch CEO, Keith Steele in the Lincoln campus presentation of the 1998/99 Strategic Plan, 30 June, 1998. This was endorsed by the Board Chairperson, Brent Layton, at meetings on 24-3-00, when he said, “We can devote all our time to reading the tea leaves. We want to build independence.”

survey on the state of science in New Zealand. Results indicated that the main concerns of scientists were job security and lack of a clear career path. This had led to a decrease in job satisfaction. Half of those surveyed felt that there was a decrease in the amount of ‘good science’ being carried out (Kirton, Ross & Mercer, 1995). Many others expressed personal thoughts about the situation, bringing up points of interest to the present research. These included: the focus on management efficiency and the achievement of objectives by a certain date; the shift from basic to applied research²⁷ (Falvey, Forno & Srivastava, 1995; Kirton et al., 1995) and to outcomes in which the benefits can be captured by means such as patenting (Falvey et al., 1995); whether this environment is conducive to innovation or creativity (Anderson, 1992); and the impact of competition on relationships between CRIs (Lovett, 1994; Kirton et al., 1995).

Nevertheless, according to official sources, the restructuring of science has been a success. Sean Devine, former Programme Manager for FRST and at the time Executive Director of the Association of Crown Research Institutes (ACRI) believed that the “[s]cience reforms are already delivering many of the benefits expected of them” (Devine, 1995: 9). Simon Upton, Minister of Science and Technology at the time of restructuring into CRIs, wrote in 1995, that “the contestability ... has brought much greater discipline and transparency into the way public science resources are deployed” (Upton, 1995: 4).

The lack of consultation between MoRST, FRST, the CRIs and staff within the CRIs, has continued on the grounds that “as the primary beneficiaries of the PGSF, their self-serving interests might subvert the strategy process. This view is a direct derivative of neo-classical agency and public choice theories” (Simpson and Craig, 1997: 75). According to Simpson and Craig (1997: 75) this has changed and there is now “open debate”. Others would disagree:

There is definitely a feeling amongst many working scientists that they are rarely consulted about policy and management issues. This was best summed up

²⁷ An underlying aim of Government policy has been to change New Zealand’s business/industry culture and its lack of support for R&D. This may take a generation to correct (Upton, 1995) and ultimately may mean that public funds would only be invested in “blue skies” or basic, curiosity-driven research (Lovett, 1994), as industry picked up the rest. This proposed shift seems to be contradictory to what is happening in practice as the present Government (2002) moves more and more to support R&D with its ‘knowledge society’ goal, while basic research is to be carried out under the auspices of the Marsden Fund (e.g., Budget, May, 2002).

by one eminent local scientist saying ‘it’s like being an All Black who spends all his time on the reserves bench’ (Lancashire, 2001: 11).

Another change experienced by employees in CRIs is the loss of the ‘public servant tradition’, at the heart of which was a guarantee of a lifetime career and a pension (Martin, 1991: 367). The nature of the ‘loyalty’ demanded by an elected government of its public servants has changed, as has what it means to say that something is ‘in the public interest’ or ‘of service to the community’. Managerialism and its concern with ‘efficiency’ or ‘achieving more with less’ (and making a profit), and with cutting the size of the public sector to promote efficiency gains, can be seen as being in conflict with the public service tradition (ibid.: 368-70).

Through the auspices of the Royal Society of New Zealand (RSNZ), Jack Sommer, an eminent American with an interest in science policy, conducted two surveys of the New Zealand science community (1996, 2000) to measure the impact of the science reforms (Sommer & Sommer, 1997; Sommer, 2000). Sommer’s comparison of the two surveys, *Voices from the Grassroots of Science: Tales of Hope and Woe* “indicate[s] a stunning level of dissonance over New Zealand science and technology policy reforms” (Sommer, 2001: 7). Scientists in CRIs were more unwilling in 2000 to recommend a career in science or engineering than they were in 1996 (67% compared with 56%) (ibid.: 5). As a university-based sociologist said to me, it is very unusual, when such levels of unhappiness have been revealed amongst scientists, for nothing to have been done about it by policy makers over the four year period between surveys.²⁸ Peter Gluckman, former Dean of Auckland University’s Faculty of Medical and Health Sciences, now the foundation director of the Liggin’s Institute, has been quoted in the press as saying, “I would not see a scientific career as compatible with human existence, at the present time. Scientists lead a bloody miserable life” (Gluckman, 2001).

John Lancashire (2001), now a policy strategist after a science management career in DSIR then AgResearch, presented his opinion on the science reforms to a Royal Society of New Zealand (RSNZ) conference, *Bio-science to bio-enterprise to bio-business*. He saw four major problems to be overcome if science was to make a

²⁸ Pers. comm. Geoff Fougere, 8-3-02.

stronger contribution to New Zealand: the role of government and the private sector in science was confused; behaviour had become too competitive; there was too much managerialism in science; and the voice of the science community had been “stilled”. He felt that Government policy has changed too often over the past decade, there was too much focus on business from FRST, and MoRST had lost touch with the science community.²⁹

Ironically, there are several reports from Government funded agencies that echo similar concerns about the competing interests within CRIs to be both providers of publicly funded research and commercial entities. In 1998 a FRST report *Technological Learning and Knowledge Application Review* was released. Five hundred end users of research were interviewed and 666 replied to a questionnaire.³⁰ The end users were quite clear that some CRIs have a “cost recovery mentality” (Hodgson, Howe, Saunders & Winsley, 1998: 26) and (quoting from the report) they were concerned about:

the extent to which the commercial objectives of CRIs are perceived to be overriding their objectives of achieving benefits for New Zealand. Many users argue that CRIs are restricting access to the results of PGSF research in an endeavour to commercialise it and capture the benefits from it for themselves CRIs are given the commercial powers and structures to enable them to be financially viable businesses so that they are able to continue to deliver PGSF outcomes in the long-term. The Foundation’s investment policy accommodates the commercial returns that underpin this. However, CRI profits and commercial returns are seen as a *condition* of staying in business in the long-term, not as the *purpose* of the business, and this is what distinguishes CRIs from private for-profit enterprises. CRIs are there to do what the market cannot do, not what it can do. The CRI Act makes clear that the primary purpose of CRIs is to deliver benefits for New Zealand, and that their commercial objectives are secondary to this (ibid.).

Some of these issues were echoed three years later in a discussion document on the state of the biotechnology industry in New Zealand, commissioned by Industry New Zealand (Randall, 2001). This document asserts that too much intellectual property (IP) is locked up in the CRIs and there should be a process in publicly funded research for IP to be auctioned off in some way at a certain point in its development.

²⁹Lancashire was the first New Zealand science voice following the ‘knowledge economy’ rhetoric of the present Government that I have heard speaking up for science and expressing a concern about the business focus of science policy.

³⁰ The report does not say who these end users were. It only indicates that they covered “a very wide range of user sectors” (Hodgson et al., 1998: 1).

This backlash to the way the CRIs are developing is seen by CRIs as a response by industry to Government restructuring and its drive for the CRIs to survive financially and grow.

A MoRST (2000) report considered that CRIs need to balance their interests better over their different responsibilities: short-term financial viability and long-term research viability; the Government's ownership interest and purchase interest; the interests of purchasers and users of research between existing sectors and new sectors; and finally, the needs of researchers to both conduct basic research and apply their research. According to this report, the slant is too much towards short-term financial viability and the Government's ownership interest, and the application of research to existing sectors (MoRST, 2000: 8). Lancashire (2001) goes further and argues that by virtue of the Government's requirement that the CRIs be successful businesses, the work of research is now compromised because the CRIs compete with the business sector for IP and business (*ibid.*: 9); scientists compete for funding, which means they are less likely to collaborate both within their institutions and between and beyond them; and the voice of science has been replaced by that of management (*ibid.*: 10). Even MoRST had to admit that within the CRIs staff morale was low and distrust of management was common (MoRST, 2000: 12).

Having discussed the broad context of the restructuring of the public funding of science I will briefly describe how AgResearch, as one of the CRIs formed in 1992, fits into this context. (A fuller description will be given later in Chapter 4.)

3.4 AgResearch

Before 1992, publicly funded agricultural research in New Zealand was carried out primarily by the Department of Scientific and Industrial Research (DSIR), or the Ministry of Agriculture and Fisheries (MAF) through its organisation, MAF Tech. AgResearch is one of the four CRIs set up in 1992 to serve the primary sector.³¹ Its original full title was the New Zealand Pastoral Agriculture Research Institute Ltd. and it was known as AgResearch, but in late 2000 it became AgResearch Limited as part of a re-branding exercise. It is slowly achieving an aim of increasing its

³¹ HortResearch, Forest Research (FRI) and Crop and Food Research are the other three.

commercial revenue as a percentage of its total revenue. In the 2000-2001 financial year it received more revenues from commercial sources (55%) than from FRST for the first time in its history (AgResearch Annual Report 2001: 6).³²

AgResearch has been corporatised, and has come to fit Drucker's description:

The main function and purpose of the enterprise is the production of goods, not the governance of men. Its governmental authority over men must always be subordinated to its economic performance and responsibility (Drucker, 1951: 81 cited in Grint, 1991: 130).

This making of an organisation into a business or company is the response of Government, Boards and management of many state sector organisations to the perceived external contemporary environment and the Government's requirements for accountability and efficiency in the use of tax payers' money. This is evident in the *CRI Act* of 1992. It was not articulated in a way that impacted on workers in AgResearch until 1997 when the new CEO arrived. In AgResearch, corporatisation included increasing the emphasis on strategic planning and profit making, restructuring into smaller units to better achieve the strategic direction, acquiring aligned commercial and research companies, and the addition of a product development company, Celentis.

According to Simpson and Powell (1999) in their study of the organisational structures of eight of the nine CRIs from 1992 till 1997, AgResearch followed a 'Technology Push' design archetype but was showing signs of movement towards a 'Multiple Project' design, which the authors feel is a better way of producing the innovation required in the present environment. The latter requires a "high degree of integration and cross-communication ... to hold such a mobile form of organization together. Typically this coherence is provided by developing shared values and a strategic vision which makes the purpose and direction of the business explicit" (ibid.: 444). The development and change of these structures supposedly indicates "a shift in the fundamental beliefs and values that are held within an organization" (ibid.: 441). My thesis challenges this statement. Simpson and Powell make no distinction between the desired 'beliefs and values' expressed by the company

³² There is criticism of this as commercial sources may include revenue from subcontracts with other CRIs which may well be sourced from FRST.

strategy and management, and the ‘beliefs and values’ as practised by workers. This is a major flaw in their argument – particularly as the authors interviewed only the CEO and one other senior management person in each organisation, and collected data from the annual reports and statements of corporate intent, which represent the strategic plan (ibid.: 446). Simpson and Powell also measure the success of the organisational design by the profit made (ibid.: 450). They do not appear to understand that the profit made is an indication of the cut taken off funding before it is allocated to science budgets, rather than an indication of the efficiency and effectiveness of the organisation.

An important part of corporatisation in AgResearch has been the dissemination of the strategic plan. This tells workers that AgResearch has the vision - “better life science ... better lives”, the mission – “sustainable and integrated solutions through life science innovation”, and brand values – “leading edge, in touch, and responsible” (AgResearch Strategic Plan 2000-2003). These statements are overlaid on a beautiful pastoral scene, on the log-on screen of all staff computers, so that they see them every day. The key parts of the strategic plan are stated as:

- Investing in new science capabilities to ensure international leadership in key areas of science
- Jump-shifting our performance in new product development
- Building our reputation as a responsible, innovative and customer-focused leader in the life sciences
- Getting maximum value from our asset base to ensure neutral EVA (economic value added) in the long term (ibid.).

Staff were introduced to the Strategic Plan by the publication of special summary booklets and by an annual presentation by the CEO to each campus with input from senior management and group discussion. In addition, and as I alluded to earlier, there was an effort by the CEO and the Board Chairman to get workers involved in the preparation of the Strategic Plan.

3.5 Context 4: The context of science

This section outlines two strands of literature on science and its practice. Firstly, I consider briefly what science is and secondly, where it is practised. These themes will be developed later within the particular context of this study (Part B onwards).

3.5.1 Science and its practice

According to the Collins Compact English Dictionary (Makins, 1994), science is: “1. The study of the nature and behaviour of the physical universe, based on observation, experiment and measurement; 2. The knowledge obtained by these methods.” Hence, science is defined both by its practice and the result of that practice, knowledge. In general, furthering knowledge in science is an incremental process. From an already espoused theory, an extension is predicted in the form of an hypothesis, which can be tested experimentally and the results observed (empirical). This testing is done in such a systematic way that other researchers could replicate it. Hence, according to the dominant Popperian falsification account, theory is always open to challenge, change and extension and is seen only as being supported by the evidence, but never proven. An assumption is that the universe is ordered and able to be explained by generalised laws. This scientific method of practice is thought of as rational by its exponents and, while research may be value-led, researchers seek to be objective and value free, eliminating bias by following the given method and submitting their work to the scientific community for critical review before publication (Monette, Sullivan & DeJong, 1994: 22-23; Blaikie, 1995). Despite the counter-views put forward by certain philosophers of science such as Kuhn (1970[1962]), the scientific method was regarded until recently as the best way of discovering knowledge. Scientists held a mystique within the public domain due to the perception that they possessed rational and objective ways of thinking, and higher level theoretical, conceptual and empirical skills compared to other ‘ordinary’ folk (Fuller, 1997; Fuller, 1993: 7).

The study of science and of the practice of science by social scientists have gone through a number of stages. The acknowledged ‘father’ of the sociology of science, Merton (1942 in Merton, 1973: 268), added a third meaning of science to the dictionary meanings: a “set of cultural values and mores governing the activities termed scientific”. His widely accepted work on the norms of the scientific community identified four values as essential: universalism, communism,³³ disinterestedness and organised scepticism (ibid.: 267-278). In a later work, Merton

³³ As in “common ownership of goods” (Merton, 1973: 273) or “communism of intellectual property” (ibid.: 303).

(1973: 298-302) writes that eponymy, the drive for professional recognition, and the wish to be ‘first’ in a discovery, are the drivers of, or dynamic behind, this normative system.

In the latter part of the twentieth century, the focus of social research on science changed to the observation of scientific practice. Social researchers³⁴ have described how scientists carry out their work in much the same way as anyone else (e.g., Knorr Cetina & Mulkay (1983) *Science Observed*; Lynch (1985) *Art and Artifact in Laboratory Science*, Woolgar (1993[1988]) *Science: the very idea*), but report it to fit the “norms” and the process of the scientific method (Fuller, 1993: 9). This ‘demystification’ of science, together with disillusionment with science over events such as the use of the atomic bomb, and concerns about the environment (e.g., Rachel Carson in *Silent Spring* (1962), H. Patricia Hynes in *The Recurring Silent Spring* (1989)), and more recently the issue of genetic modification, have placed scientists and the work of science under greater public and academic scrutiny. The ‘black box’ that was science is being “unpacked” (Latour, 1987). The freedom of science to choose its own direction with the declared aim of increasing knowledge is seen by scientists to be under threat. Others outside the scientific community may see this preference on the part of scientists to be accountable only to science (Sommer & Sommer, 1997: 20), as scientists escaping responsibility for the use made of their work.

This study is concerned with the practice of agricultural science and uses the scientific method to seek to understand the physical world of agriculture. Busch & Lacy (1983: 6-19) describe the rise of agricultural science as part of the change in attitudes to production from the land that were required to turn farming from a means of subsistence into a commercial operation. In the past, agricultural science in New Zealand has been seen to fit a utilitarian framework with its major concern being increased production (Brooking, 1996).³⁵ As such, agricultural science has always had a practical, “commercial” side. This is now being balanced by a concern for

³⁴ Owing to the recent nature of this work the coherent name ‘science studies’ is only just emerging for what in the past have been called the ‘social study of science’ or ‘science and technology studies’ and other variations.

³⁵ Busch & Lacy (1983) outline this with respect to the U.S.A.

environmental and agricultural sustainability as demonstrated by the changing emphases in the output descriptions for applications for FRST funding. There is a growing interest in quality as compared with commodity production (Bezar, 1994).

3.5.2 Science within an Organisational Setting

Most people concerned with scientific research work in organisations. Organisations exist to “get things done” and they do this by using a division of labour, assigning workers to different groups to achieve particular tasks (Munro, 1997: 20). As organisations may provide people with a strong source of identity (Eccles and Nohria, 1992: 65), this “work of division” where people actively put energy into maintaining divisions, can be a source of conflict (Parker, 1997: 126-137).

Scientists belong to a particular group of employees identified as ‘professional’.³⁶ They demonstrate an allegiance “to science” which supersedes organisational boundaries. Their membership of the scientific community may at times set them in conflict with their organisation’s aims and objectives. Scientists tend to be “cosmopolitans” rather than “locals” (Gouldner, 1954). Raelin (1991[1985]: 2, 16) identifies cosmopolitans as those who were likely to have been adolescents in the 1960s and hence part of the ‘flower power’ generation. According to Raelin, cosmopolitans have strong views about being autonomous and free to make decisions about how their work is to be done; they would probably stay in the job if their pay was reduced; their friends are in the same profession; they do not want to be administrators; they think their professional peers, rather than any one else, should judge their performance; and they are more concerned with advancing their own professional reputations, than that of their employing organisation.

Scientific workers, like any other workers, can be studied in terms of their work practice – the work they do - and the organisational environment in which it is carried out.

³⁶ Technicians have not generally been regarded, or regarded themselves as ‘professionals’ (Barley, 1996: 23).

3.6 Conclusion

In this chapter I have articulated how this thesis is to be placed within the context of the New Zealand restructuring of the public sector, particularly how the public funding of research was organised in a manner supposed to ensure efficiency and accountability to Government goals. As the particular organisation I studied, AgResearch, conducts research in the pastoral agricultural sector, I described the changes in the place agriculture has played in society over recent years. Then I considered how AgResearch has responded to the challenges of restructuring by corporatisation. Because AgResearch is also concerned with the work of science I briefly touched upon how science has been studied in the past and how science practice is carried out by workers in organisations.

Context is important for this research as it was conducted at a significant time for New Zealand and for the changing world of work. It tells the story of the impact of the restructuring of New Zealand's public sector on a particular group of workers within that sector. To my knowledge, this has not been done before. It describes the impact of a particular change of emphasis in workforce control and so joins a growing body of literature in this area, but provides a different context and research perspective. In the next chapter I describe how I carried out this research and why I chose to use particular methods to study scientific workers in AgResearch.

PART A: SETTING THE SCENE

Chapter 4: The ethnographic method

In this chapter I discuss why I chose an ethnography as an appropriate way to study workers in an organisation. The interpretive perspective, along with the tool of symbolic interactionism, enabled me to study how the workers in this organisation made their work meaningful. The research process I followed is described, followed by a full description of the site of the ethnography, AgResearch, including two figures outlining the organisational structure. The chapter concludes with a description of each of the case study groups to draw a picture of the work and the workers studied for this thesis.

4.1 The appropriateness of the ethnographic approach

I decided that the best way I could find out what was going on for scientific workers in AgResearch, consistent with the research objectives stated earlier, was to use qualitative research methods. When this study started I was not able to tell what issues would emerge as I explored what it was that was about their work that made scientific workers happy and unhappy. I wanted to use a research method which would leave this quite open and allow me freedom to pursue the research in any direction the data I was gathering took me. As I was exploring 'meaning' I needed to use a technique in which those I wanted to study were able to express in their own words what was happening to them in their work environment. There was also a need to triangulate what I was hearing, hence the use of observation and the collection of both internal and external organisational communications.

The ethnographic techniques of observation and interviewing (Lofland & Lofland, 1995; Becker, 1998) allow "a close observation of informal practices" (Ackroyd and Thompson, 1999: 51) in people's everyday lives. Bate (1998[1994]: 70-71) justifies the use of this anthropological method because it gives a 'both-and' perspective on culture, including organisational cultures in Western settings.

It was the business 'gurus' and strong culture writers who abandoned this [variety] during the 1980s, having chosen to ignore the pluralistic aspects of cultures and focus on only the 'shared', unitary aspects – shared values, shared understanding, shared this, shared that. Anthropologists would criticize organization and management writers for disposing of the variability which they

have always regarded as an important feature of a culture. They might also wish to point out that cultures consist of similarities and differences, convergent systems and divergent elements, pluralism and integration, all of them rubbing shoulders and vying with each other in a loosely coupled system; and they would tell us that the culture perspective never presumed one or the other – that only came later when ‘culture’ had been transformed from an interpretive perspective to an ideology or strategy for managerial control. Their [anthropologists’] conception of any culture is as a ‘multiplicity of human communities’ ...

As I was able to ‘live in’ at AgResearch, having my own place within the organisation as a staff member on study leave, the research method was able to take this ethnographic form in which I could be a participant-observer, but at all times my researcher role was overt, not covert.³⁷ My position on that continuum, “participant” versus “observer”, could vary according to the occasion. In the next section I explain the perspective which informs my analysis. I am aware that describing the research process is all very well but a researcher approaches the analysis of their data from a particular viewpoint.

4.2 The interpretivist perspective

Like Grint, I consider work to be “a social not an individual activity” (Grint, 1991: 48) and view this social aspect of life from an interpretivist approach, which focuses on “the indeterminate and contingent nature of reality, the significance of human interaction, the unintended consequences of human action, and the influence of interpretation” (ibid.: 115-6). In adopting this perspective I focus on the words of those I am studying, accepting and respecting people as they are, not as I think they should be (Nord and Jermier, 1994) but at the same time positioning them in a particular context (Rose, 1978: 244) . This open-ended nature of the interpretive perspective fits well the inductive character of the qualitative method. By simply asking workers why they did the work they did, Goldthorpe et al. in England, and Dalton and Roy in America re-discovered that workers’ behaviour was rational (Ackroyd and Thompson, 1999: 33-34) and usually had to do with economic rationality (Goldthorpe, Lockwood, Bechhofer, & Platt, 1970[1968]). Clegg (1994: 314) supports an interpretive approach promoting this meaning of rationality. “Rationality is not something that characterizes particular models of what it is that

³⁷ In fact my notebook and I became something of an institution. This was symbolised by a photo taken of just my notebook sitting in my lap, by a member of one of the case study groups.

actors and organizations ought to do but instead should be thought of as something emergent from the action scenes and sense-making of the actors themselves.”

Ashforth and Mael (1998) and Ackroyd and Thompson (1999) also emphasise the importance of studying resistance and identity from the perspective of those who are resisting. “Both identity and threat are in the eye of the beholder: An assault on a cherished self exists when it is *perceived* to exist” (Ashforth and Mael, 1998: 98).

Rose (1978: 244) points out that there are risks with this approach:

... actors are not sovereign in defining and acting in accordance with their definitions of the situation; and subjectively rational action may be objectively irrational. It is not arrogant or patronizing for investigators to acknowledge this at least in principle. Indeed, unless they do, social study can offer no important generalizations. Men (*sic*) are never completely free to define their situations independently of structural constraints, to identify their objective interests fully, or to act completely rationally as a result. They may struggle to do so, and the ultimate value of social science lies precisely in assisting these efforts. Misplaced sympathy for subjects may result in a sentimental exaggeration of their freedom and rationality, and indirectly assist their continued oppression.

I came across very few studies by researchers who have used an interpretive perspective in the study of work. If the researcher does not respect and value the perspective of those being studied then the relevant and significant research material on the part the meaning of work plays in self-identity is unlikely to be available to them. The link between resistance and identity at work is linked to studies of everyday life by researchers like Goffman (1961a), who demonstrated that even people who have very little freedom, such as those in institutions for the mentally ill, develop autonomous ways of reinforcing their own identities.³⁸ Similarly Cohen & Taylors’ (1992[1976]) study of prisoners demonstrated how they are able to maintain their identities by consciously escaping or distancing themselves from prison life.

Although Clegg (1994: 281) reminds researchers that it is very difficult to “access the subjectivity of others” because “... one should not be where one does not belong” (quoting Bob Dylan’s song ‘Drifter’s Escape’, 1968) he feels that there is no way other than through words to gain an understanding of what is going on in a person’s

³⁸ Goffman used the expression the ‘recalcitrant self’ in *Asylums* (Goffman, 1961a).

thoughts: “Outside language and other semiotic systems intentions remain inscrutable. There is no other access to the contents of the other’s mind” (ibid.)³⁹

Symbolic Interactionism provides an appropriate research methodology for the analysis of an individual’s behaviour and actions. Blumer (1969), principal architect of this methodology, developed an interpretive approach to understanding social action and interaction that examines the meanings bestowed by social actors on everyday objects. The theoretical foundations of Blumer’s method rested on the work of Mead (Blumer, 1969). In essence, Symbolic Interactionism considers actions and objects to have no intrinsic meaning. Instead meanings are constructed and conferred through social interactions and are negotiated by actors according to the specific social context (ibid.: 2-3). The constructs (notably language) come to ‘stand for’ or ‘symbolise’ the objects and activities, often in a ‘short hand’ form (Blumer, 1967, 1969). The same word can often have different meanings, and therefore significance, to different communities. Such meanings are neither fixed nor exclusive. Although, by common agreement, the word ‘work’ symbolises the application of effort for some purpose, the negotiable character of this meaning allows for both the possibility of other meanings (e.g., earning a living, housework, doing a PhD), and its tactical use in constructing action pathways perceived to facilitate desired ends.

In keeping with symbolic interactionist principles, I will show that science actors construct different meanings of their work in order to safeguard their livelihood and reasons for doing that work. In effect, the relationship between Government policy, implemented through the funding structures of FRST, and the science groups, as they manoeuvre to obtain the funding necessary for their survival, turns in large measure on the meanings science workers negotiate for their work. In keeping with the sociology of human action and social structure (Giddens, 1989:12), no assumption is made here that the outcome of the negotiated meanings of work is one that will

³⁹ This contrasts with Erikson (1979: 149) who wrote: “Once the observer gets over his embarrassment at having tried to confront so deep a pain with so casual an inquiry, he begins to recognize the futility of trying to convert everything into the coin of words. And yet the emotion behind the words seems easy enough to detect if one searches for it.”

succeed in the way intended by the actors or by Government. That is, the actions of the actors may not produce the result the actors hoped for. Scientific workers may find that they are not any happier and the Government may not achieve its aim of a ‘knowledge society’.⁴⁰

The next section describes how I went about this research – obtaining organisational and participant permission and the research practice.

4.3 The research process

The proposal for this research was submitted to the Lincoln University Ethics Committee before any interviewing commenced. To seek approval for conducting the case studies, I approached several managers at different levels in AgResearch. I received support from the General Manager of the Grasslands Division (as in 1998 AgResearch still had a divisional structure) for studying the Endophyte Group; the Lincoln Campus leader (a position that no longer exists); the leaders of the Microbial Control Group (MCG) and the Wool and Skin Group; and the Animal Genomics Platform Leader, for the study of the Molecular Biology Unit. The latter two consulted with their workers before agreeing, and the General Manager consulted widely. All agreed on the understanding that group members would be asked individually to participate and they had the right to refuse. I indicated also that I would not be informing group leaders about who had or had not been interviewed.

In this context I interviewed 56 staff members, observed over thirty organisational meetings and participated in other campus activities. I observed staff at work and documented hundreds of informal conversations. From my previous work within the organisation as a biometrician, ‘bid coordinator’ for a period, and member of the strategic planning network, I already had well established networks with most of the staff on the Lincoln campus and with many other staff throughout the organisation. I operated as a Referral Advisor for the Employee Assistance Programme till I left in February 2001. I still travel to Lincoln in a carpool with three AgResearch staff members.

⁴⁰ This thesis is not the place for a discussion of the ‘knowledge society’, the role of IP and its ownership. For a comprehensive discussion of this issue in an international context see Drahos and Braithwaites’ *Information feudalism: Who owns the knowledge economy?* (2002).

Participants were fully informed about the nature and purpose of the research, free to withdraw at any point and/or ask that anything they had contributed not be used. As part of the Lincoln University Human Ethics Committee approval process, each participant signed a consent form to this effect. After each interview was transcribed I returned it to the interviewee to provide them with the chance to correct or delete anything they had said. (Some participants took this chance to clarify what they had said and one person removed the things she had said about other members of staff. Most made no changes.) I was freely available to all interviewees. In addition I returned to the research sites at the completion of the research to present the results in order to thank workers for their participation, to check that they identified with the results and to listen to their comments.

Participants were assured of confidentiality. The aim was to protect subjects from any personal risks they may have run as a consequence of their participation. The identity of the participants was known only to me. The transcriptions and tapes of the interviews were labelled according to the time of interview, not referred to by name. In this thesis I have used pseudonyms whenever I have quoted a participant. Some have been given more than one pseudonym if I was at all concerned that there could be a link made between one quote and another that could enable the participant to be identified. At some points I have also only identified the case studies by a letter of the alphabet (and in a different order from that first presented) if I was at all concerned about confidentiality issues.

In the interviews, I asked workers to tell the “story” of their involvement in science, how they saw themselves and their work, what made their work satisfying and what made it frustrating, and what it was like working in AgResearch (see questionnaire in Appendix A). The Hawthorne experiments at the Western Electric Company’s plant in Chicago ...

highlighted a strong link between attitudes to work and the wider social attachments outside the plant, especially the early socialization of individuals, which the company were powerless to affect the employment situation cannot be analysed solely by reference to itself – the links between the domestic and the employment situation are critical (Grint, 1991: 126).

People do not have a work identity that is discrete from their history, society and their present social situation (home, leisure etc.). This justified the approach of

asking interviewees to ‘tell their story’ rather than answer more detailed, pre-chosen questions which would have assumed that I had anticipated their answers. As Rose (1988: 14) stated:

We should distrust words like ‘correct’ and ‘mistaken’. We aim to see more clearly what is going on – what people want, and why they do the things they do. But outside observers should keep a modest opinion of their objectivity and neutrality. Patterns of control ... are not fixed but shifting.

The interviews I conducted were very open and exploratory, lasting from two to four hours, except for those of the Science Platform Leaders (SPLs) or Science GMs, as they did not have such time available. The interviewees gave permission for their interviews to be audio-taped. Within twenty-four hours of each interview I made “notes on notes” to record my personal impressions and thoughts.

The interviews were transcribed and these transcripts, along with the notes and observations, formed the qualitative data that was analysed to produce the categories and emergent themes discussed in Part B (assisted by the use of the software package NVivo, a form of NUDIST, Non-numerical Unstructured Data Indexing Searching and Theorising (Richards, 1999)). The insights of Symbolic Interactionism (Blumer, 1969) helped me in the selection of these categories, or objects on which the interviewees placed importance, and I was able to explore the meaning ascribed to those objects and how they were linked to develop emergent themes. This qualitative research process basically follows that outlined by Lofland and Lofland (1995) in their book, *Analyzing Social Settings*. In Part C these themes are linked into possible theories and sometimes supported by other literature as secondary data.

In the next section I describe AgResearch more fully, and introduce the case studies I chose within this organisation. My earlier discussion (Section 3.4) was concerned with how AgResearch fitted in the context of the restructuring of science. This section describes the organisational structure.

4.4 AgResearch – the ethnographic site

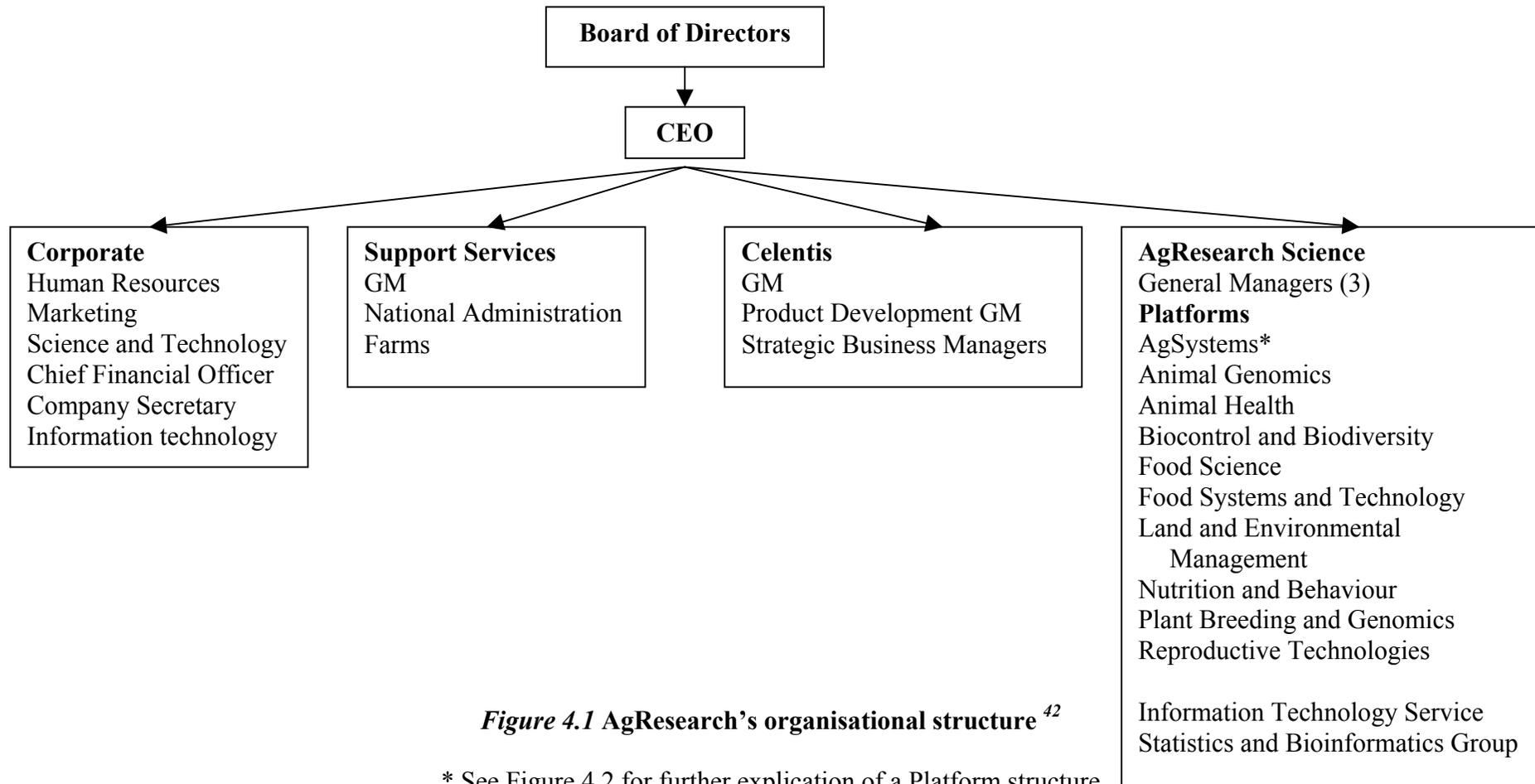
In 2001 AgResearch was an organisation of 921 employees, of whom 281 had a PhD qualification. In 2000 these figures were 897 and 279 respectively (AgResearch Annual Report 2001). At its establishment in 1992 there were 1109 employees.

Approximately two thirds of these employees were scientific workers and the rest were in support services, human resources, information technology and so on.

A Board of Directors appointed by the shareholding Ministers of the Crown provides the corporate governance of the organisation. The CEO is responsible to this Board. He⁴¹ is supported by a corporate of senior management employees including the Human Resources Advisor, Marketing, Science and Technology Manager, Chief Financial Officer, Company Secretary, Information Technology Manager. (See Figure 3.1.) The Support Services include the Personal Assistants (PAs), receptionists, farm staff and accountants. Then there is AgResearch Science, which has a triumvirate of general managers, only one of whom represents science on senior management level committees. At the next level there are ten Science Platforms, each with a SPL, who has responsibility for the management of all workers in the several science groups in each Platform, with Human Resource responsibilities also. Each of these Platforms has fifty to seventy workers. The ways in which the Platforms and the groups are managed is very dependent on the style of each manager. The organisation also includes the product development company Celentis, which has a minimal number of staff who are mainly business managers, each with responsibility for business developments arising from several Platforms.

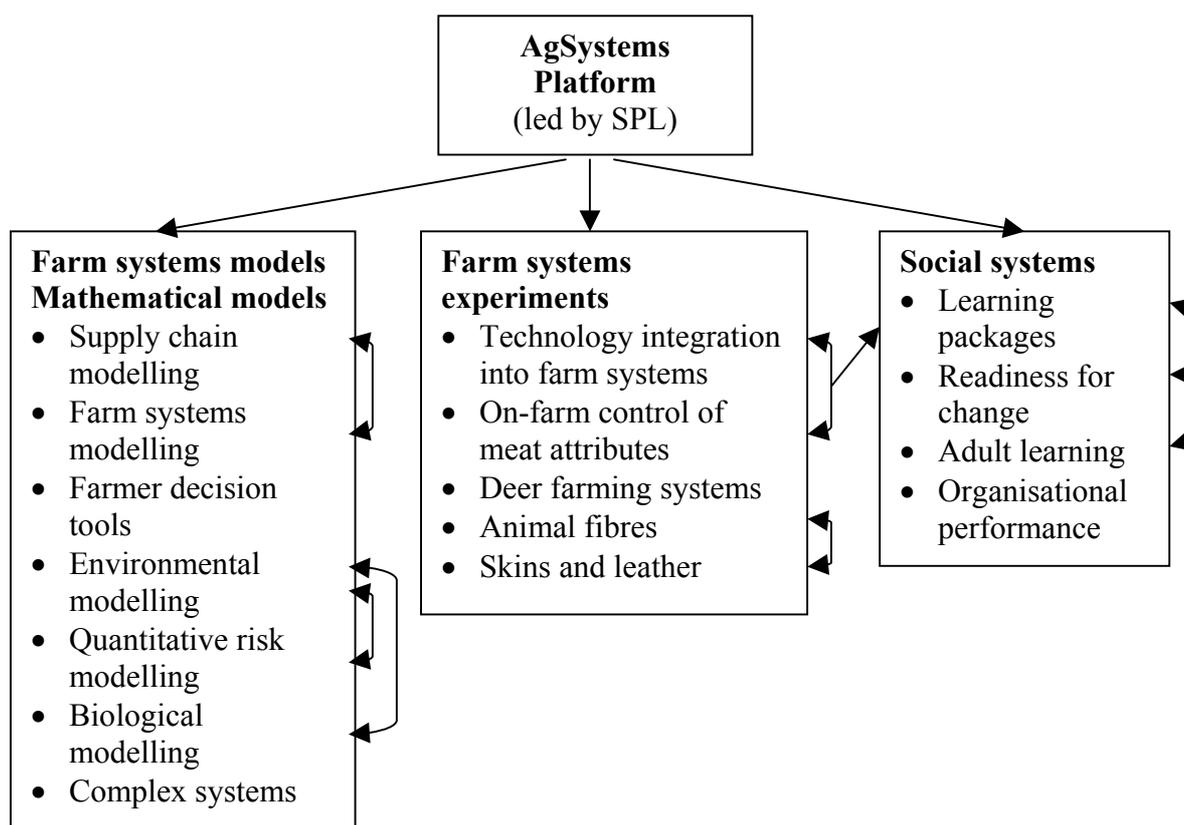
It is difficult to explain the structure within each Platform because they are organised around science programme objectives which may have overlapping personnel. In 2001 FRST instituted larger programmes and now each Platform usually has one large FRST programme and many smaller commercial programmes. Staff forming a group may have an informal name but it may not be organisationally recognised. Each worker is responsible to a line manager, and line managers may be responsible for one or more workers. For example, in the Wool and Skin Biology Group, there was one scientist in charge (who was responsible to the SPL), but he was responsible for three scientists and two research associates. Two of the scientists were not responsible for any other workers but the other one was responsible for another two research associates. The programme leader may be the SPL, but not necessarily,

⁴¹ All the CRIs have a male CEO.



⁴² This is a reconstruction of the 'official' structural diagram taken off the intranet in 2000. Note that though two thirds of the workers in AgResearch are in AgResearch Science and do the work for which the organisation exists, they are not well represented by this diagram.

because he may have devolved this responsibility to someone else. Figure 4.2 illustrates the complex nature of the Platform structure using the AgSystems Platform as an example. The Wool and Skin Biology Group is hidden within the ‘Animal Fibres’ and ‘Skins and Leather’ part of the Platform’s programme.



Note: The arrows demonstrate staff linkages.

Figure 4.2 An example of a Platform structure: AgSystems

Groups in AgResearch are not management-directed as such. They have tended to grow simply because their leaders have been able to gain more research funding. Group leaders have often risen to the leadership position through automatic promotion rather than through an appointment process. Such progression is taken as a natural part of being a scientist. Rae, for example, described how she gradually increased her responsibilities through her boss passing on more work and through her own initiatives. This makes AgResearch a different work scene from the teams and groups described in the management literature in which management sets up teams.

In AgResearch there is a much greater sense of autonomy already present as part of a group's evolution. (This situation may well alter as the distribution of funding becomes more organisationally focused, moving to a more bulk funded system under greater organisational control, rather than FRST focused.)

AgResearch workers are spread over five major campuses: Ruakura in Hamilton, Grasslands in Palmerston North, Wallaceville, Lincoln, and Invermay, out of Dunedin. Staff in a Platform may be spread over several campuses. AgResearch also owns and operates various research farms, some on campus sites and others further afield, such as the farm at Winchmore in Mid-Canterbury and the high country station at Tara Hills near Omarama. Some staff work within a nearby university in order to have more interaction and collaboration with university colleagues. An example is the Soil Science Group based at Lincoln University.

AgResearch set up a product development company, Celentis, in the year 2000. In a sense this supports Government policy with its emphasis on using knowledge to bolster New Zealand's economy. Celentis was set up as a separate company because as such it was more likely to gain venture capital from overseas sources than it would if its link to AgResearch was more obvious.⁴³ However, it was also its stated intention that within the foreseeable future it would provide independent funding from its profits to invest in more research in AgResearch, i.e., AgResearch would become a client of Celentis. This would enable AgResearch to be less dependent on Government funding. (Remembering that AgResearch was set up to serve the pastoral agriculture sector as part of the restructuring of the public funding of science, the existence of Celentis indicates the ambivalence of Government policy.)

This section described AgResearch, the place in which this research was carried out. In the next section I drop a level to describe the particular science groups I chose to access the 'ordinary' scientific workers in the organisation.

⁴³ One of the Government responses to the lack of venture capital in New Zealand has been to set up a capital venture fund by taking money from the reserves of the profitable CRIs. As AgResearch had already earmarked this money as its own venture capital in Celentis it was very upset and made strong representations to the Minister of Science Research and Technology. The fund has still gone ahead (2001 budget) with the appointment of a manager (Royal Society Alert 194, 20 Sept. 2001). It was a very tidy way for the Government to provide some venture capital with no cost to the taxpayer, as Jenny Shipley, Leader of the Opposition, lost no time in pointing out!

4.5 The case studies

As case studies I chose four science groups from different backgrounds and with quite different foci in order to appreciate some of the wide diversity found within AgResearch. In this way I was ‘anticipating’ one major criticism of case study approaches: the difficulty of generalising findings beyond the specific group studied. At the beginning of this research I did not know if all groups in AgResearch were unhappy about the same things, for they had different levels of security of funding, and had come from different organisations at the time of restructuring – some coming from DSIR (25%) and some from MAF Tech (25%). Half of those I interviewed had joined the organisation since the restructuring (see Appendix B).

As I was based on the Lincoln campus of AgResearch, where most of my observations would take place, for practical and financial reasons I chose some groups with workers on the Lincoln campus. One of the groups moved to another organisation’s campus, still in the vicinity, after I decided to study them.⁴⁴ All workers of another group were on the Lincoln campus, another had most workers on other campuses, and the third had all workers on yet another campus. The selected groups were also in different Platforms and of quite different disciplinary backgrounds. I felt that there was enough variety of work situations to choose from within the organisation without needing to cover several CRIs. I also had to be practical about the number of people I could interview and the work that would entail. Four groups would give me an indication of the variability in the organisation and whether my findings were likely to be group related or common across the scientific workers in the organisation. At first I was only going to study three groups but the fourth was added when I realised I needed to study a group that was considered to be very successful in the current environment. The one I chose was based on molecular biology (the ‘latest fad’, as one of its members expressed it). Given that this group was so successful, I expected that it might be ‘different’ from the others in terms of worker satisfactions and concerns.

A case study is appropriate when “a “how” or “why” question is being asked about a contemporary set of events over which the investigator has little or no control” (Yin,

⁴⁴ This event was not related to my actions!

1994: 9). Such a study:

is an empirical inquiry that investigates a contemporary phenomenon within its real life context, especially when the boundaries between phenomenon and context are not clearly evident It copes with the technically distinctive situation in which there will be many more variables of interest than data points

and hence relies on the researcher finding “multiple sources of evidence, with data needing to converge in a triangulating fashion” (ibid.: 13). Hill & Gidlow (1988: 5-6) used the case study method to demonstrate that the process of technological change, which was central to their enquiry, did not have ‘a life of its own’ and social processes played an important role. They found the case study approach to be very satisfactory because it was able to capture “the dynamic nature of relations between key groups” (ibid.: 5) and, through it they were able to test the validity of the findings by the use of a strategy that is both deductive and inductive, as well as by cross-validation (ibid.: 6).

Having discussed my reason for studying a number of groups within AgResearch, I will now describe these groups quite fully in order to give a ‘flavour’ of their culture and the work that they do. Appendix B summarises the demographic characteristics of all those I interviewed.

4.5.1 Wool and Skin Biology Group (W&S Group)

This Group had a background in MAF Tech before restructuring. During the period of this study the members of the Group were based at the Wool Research Organisation (WRONZ), across the road from the main AgResearch workplace, the Canterbury Agriculture and Science Centre in Lincoln.⁴⁵ The Group made the move to WRONZ in order to be closer to those who shared their research interests and with whom they were supposed to co-operate.⁴⁶

After the internal restructuring in 1999, the W&S Group was placed in the AgSystems Platform when its members actually wished to be in the Animal

⁴⁵ This campus is shared with three other CRIs: Landcare, Crop and Food Research and HortResearch.

⁴⁶ Because of personal differences between their divisional manager and the CEO of WRONZ it took about two years for this move to happen. At the time WRONZ did not carry out any on-farm fieldwork, and so this was an area of research in which this group could collaborate. By the time the group did transfer, WRONZ had established its own fieldwork and the AgResearch team was left in limbo. The group moved back across the road to the AgResearch campus again in late March, 2002.

Genomics Platform. Its leader made many submissions to this effect but did not feel he was listened too. Officially the move was to avoid further dilution of the molecular genetics capability of the Animal Genomics Platform but it may well have been that they were placed in this Platform to even up the numbers. The AgSystems Platform consists of very diverse groups ranging across farm systems to modelling to social science (see Figure 3.2). Its focus is on work in the food product supply chain, which requires funding from industry sources. The W&S Group, with its focus on non-food by-products, was adversely affected by reductions in Government funding and found it difficult to obtain R&D investment in a ‘sunset industry’.

Members of the W&S Group saw it as ironic, in hindsight, that their research proposals of 1999 were used internally as exemplars of the shift the organisation wished to make to demonstrate its alignment with Government policy via FRST. This was to be done by focusing on quality and adding value, rather than commodity production. Now, however, the requirement is for “new and novel products that will add wealth to the primary sector” (from the abstract for the ‘Low Chemical Systems and Associated Branded Products’ FRST programme 2001).

The W&S Group, is very applied and feels research should fit the interests of the agricultural sector. It is not in science just to add to scientific knowledge. In the course of an interview, Craig, a scientist in the Group, epitomised these attitudes when he said, “I love sheep”.⁴⁷ Others in the Group also chose their work because of their agricultural interests, as Grant and Brent’s comments indicate:

I always had a fascination with agriculture and particularly when I got on to my teen years. I enjoyed yeah, going on holidays to relation-type farms. And I got a lot of personal satisfaction out of being outside working with animals - stuff like that (Grant).

... everything we did was for the good of the New Zealand farmer (Brent).

At the same time the Group’s members are from a very traditional scientific background and hold strongly to deductive ideals.

The members of this Group actually liked, if not necessarily loved, sheep. They liked working with them and were concerned for their welfare and for the welfare of sheep

⁴⁷ All members of the group were interested in sheep but three in particular could be said to be particularly fond of them.

farmers. This had strong implications for the orientations of the Group. It wanted to save the sheep industry or, to put it more moderately, to help the sheep industry, and (particularly for Craig) the wool industry, survive. One member of this Group (the youngest⁴⁸) thinks that it is time science paid more attention to the concerns of some of the more extreme community groups, such as animal rights activists, because they may have a point and may well anticipate future, international and local opinion about animal welfare.⁴⁹ (Such concerns could impact strongly on New Zealand's overseas markets.) For example, some practices to reduce the impact of flystrike in the sheep industry add to the costs and work of farmers, involve the use of chemicals, or may involve short but painful procedures to sheep, to prevent the slow death that flystrike can cause. In this context, Craig created the concept of 'the ethical sheep', a wool-producing sheep with a bare bottom and head, and bare legs. This was in the process of development through traditional breeding methods. Initially money for this research came out of other budgets and, as Craig popularised the idea, it was first funded through a wool programme and then was funded within a programme on low chemical use. Three years down the track the whole research policy focus of the Foundation changed and this funding was unlikely to be continued (Scobie, 2001).⁵⁰ The Group's focus was to apply for Meat and Wool Board funding but at the time of this research these entities were in disarray and the group's future was uncertain.

In its attempts to survive, the Group had also encountered difficulties within the CRI. After trialling titles for the ethical sheep programme proposal incorporating references to sheep welfare, flystrike and sheep breeding, a suitably nondescript title was accepted at the third attempt and it was fitted into the Low Chemical Systems Programme. (This is a deft reference to 'organics' without using the word and all its complicated referents.) The content of the proposal had not changed. In this way the scientists in the group surmised (rather than being told directly) that the AgSystems Platform did not research any issues to do with animal welfare, or animal breeding,

⁴⁸ Kuhn (1970 [1962]) thought that change is initiated by younger members of the scientific community or by people 'switching' from other disciplines/sub-disciplines.

⁴⁹ His change of heart was in the nature of a religious experience. He was so troubled by a reporter calling him Frankenstein because in one of his experiments he had produced a 'chimera' sheep (four parents rather than two), that he reflected on the nature of his work and has changed its focus from being purely science and curiosity driven to solving what he sees as 'real' problems (Scobie, 2001).

⁵⁰ Some of the hard won funding of this research group has also been redirected internally, by the Science Strategic Manager, to the FRST programme 'Control of Human and Animal Hair Growth and Characteristics'. In other words, it has been redirected to study baldness.

which constricted the possible areas of their research interests. To work in these areas would be seen to step on someone else's 'patch'. Another survival tactic was to diversify into research on leather, particularly deer leather. The Group had also looked for work with other fibre and meat-related industries but as these were very small there was little money available for research. One member brought in some alternative income by auditing and registering farmers for two meat companies under contracts to the CRI. Two of the Group members accepted redundancy in the repositioning operation the organisation carried out in 2000.

This Group had not been quiet about its plight. It was continually presenting ideas to its Science Platform Leader. It worked hard to maintain links with the meat and wool industries. The scientists made presentations on their work to the Board on its annual trips around the different campuses and farms. From its inception, however, the platform structure of the organisation has impacted negatively on the Group, giving it a strong message about how it does *not* fit.

4.5.2 The Endophyte Group (E-Group)

The Endophyte Group with its background in DSIR, is in the Plant Breeding and Genomics Platform. It is a true multidisciplinary group that was informally drawn together by interest in endophyte⁵¹, a fungus in ryegrass. Endophyte, as the cause of ryegrass staggers, was discovered by one of the researchers in this group through his observations of sheep in an unrelated experiment (Fletcher & Harvey, 1981). Endophyte affects the efficiency of the production of meat, wool, and dairy products. It also can cause heat stress in animals, and confers some insect protection on grass.

The E-Group had developed techniques for the inoculation and storage of grass seed containing different endophytes. It had produced many saleable (and patentable) technology products for both the New Zealand and overseas markets. The group also promoted the impact of endophyte on animal health, and its potential as a "non-tariff barrier to market access" (FRST Proposal 2001: Forage and Symbiont Genomes). To further the exploration on other properties of endophyte, the E-Group also was using the tools of molecular biology, hoping to exploit the interest in this area. This aspect

⁵¹Because of this informal nature it is difficult to say how many staff are in this group. I interviewed fourteen staff but only about three of these could be considered to be working full-time on endophyte.

of its work was successful in receiving public funding and also involved collaboration with a university (FRST Programme: Genomics of Plant-fungal Relationships), a requested part of Government science policy.

The E-Group was discovering that it enjoyed its relationships with commercial clients. It was able to negotiate with them in a satisfying and rewarding way and demonstrate the skills and potential of its members to contribute something useful to those clients. As Fred said:

I get satisfaction from working more recently – you know, the discussions we are having with private companies that are funding aspects of our work - working out what they want, hearing them say what they want and developing a programme that meets their needs and fits within our parameters.

The profits generated by the E-Group could fund its future work: maintaining the endophyte research, improving present products, and studying all the many other aspects of the endophyte-plant-animal interaction yet to be explored, which, incidentally, may be a rich source of future products. But the E-Group felt there were signals from corporate office that it may wish to use the profits for other research of a higher organisational priority. This made Group members feel insecure and indicated that even though the E-Group was in harmony with the organisational strategic direction, that was no guarantee of organisational support in the future.

Only three members of this Group were based at Lincoln – those doing the animal work - and they were full-time on endophyte. The rest, except a scientist at Ruakura, were based on the Grasslands campus at Palmerston North, and probably none worked full-time on endophyte. They crossed many disciplines: biochemistry, plant pathology, mycology, plant physiology, toxicology, seed science, plant breeding, entomology etc. In spite of this variety of backgrounds, the common fascination with endophyte meant that Group members on the Grasslands campus frequently had morning tea, lunch and afternoon tea together and so kept in touch with each other, without many formal meetings. (This did mean that scientists not on this campus missed out on this informal communication.) They felt privileged to be part of the endophyte story and I sensed much intellectual excitement and enthusiasm for what they were doing compared with members of other groups.

4.5.3 The Microbial Control Group (MCG)

The Microbial Control Group in the Biocontrol and Biosecurity Science Platform has had a long interest in grass grub. It was established through the drive of one person, an entomologist, a self confessed atheist, who told me, “God must love beetles because he (sic) made so many of them”. Grass grubs are endemic to New Zealand and affect the production of ryegrass by eating away at the roots. The Group’s work has been positioned in the area of the biological control of pests and the protection of the environment (FRST programme title: Pest Management Technologies for Enhanced Environmental and Product Quality). The programme description mentions that:

... the research will assist New Zealand’s primary industries in realising their increasing economic potential. Management systems will be based on beneficial organisms and related gene products; the latter will provide the foundation for planned new, advanced biological industries.

This Group has its history in MAF Tech, which typically had a very applied agricultural focus, but in contrast, the scientists in this Group were quite clear that their interest lay in science not agriculture. The leader of the Platform reflected the Group’s views when he told me, “I’m not an agriculturalist. I don’t like farms much.” Another scientist in the Group said that farms “are places of unspeakable filth and cruelty”.

Research on grass grub has been going on in New Zealand since the early 1900s. In the late 1970s work started on isolating a naturally occurring bacteria called “amber disease” which had potential as a biocontrol of grass grub. This micro-organism was patented in the 1980s and ever since attempts have been made to commercially produce it in a form that can be used by farmers. Also, because grass grubs are New Zealand natives, any means of control is only applicable to New Zealand, which is not a large market. Over its history, two chemical companies have been contracted to produce this bacteria in a commercial form, but these attempts were unsuccessful. This changed recently when a formulation chemist⁵² employed by the MCG has been developing innovative methods for placing this bacterial biological control agent in

⁵² A formulation chemist works on ways of making a saleable product from a scientific product. This product has to have a reasonable shelf life, be able to be produced to a consistent standard in large quantities at a price the user can afford, and be able to be applied in a form that is practical to the user.

the soil. His work has implications far beyond grass grub because pharmaceutical companies all around the world are interested in finding better ways of storing bacteria.⁵³ The MCG gained internal CRI funding for this formulation work because of its potential for IP and potential for profit from licensing and making products of interest to the biotechnology industry. Most of the Group worked on developing different strains of this bacteria and had other contracts, many involving the use of molecular biology, to develop biocontrol methods for other beetles. Biosecurity is playing an increasingly greater part in the Group's work. This area is of great strategic concern to New Zealand as it tries to maintain New Zealand's isolation from such things as foot and mouth disease and potential insect pests.

4.5.4 The Molecular Biology Unit (MBU)

Though this Group had its origins in MAF Tech, most of the workers had joined since the inception of AgResearch and were generally younger than those in the W&S Group and the E-Group. This unit was actually only a 'group' in terms of occupying the same physical space (the end of one floor of the University of Otago Biochemistry Department), but all workers were from the Animal Genomics Platform. There were parts of at least five science groups in the unit with four being led by the three scientists on site and the Platform Leader while others were led by scientists based at Invermay. The thirteen or more⁵⁴ scientific workers in the MBU did the molecular biology components of the research for their different science groups. In the past, sheep have been the flagship for all the MBU's research. The Group was working hard to reduce its dependence on sheep. It wanted to move away from work on product traits, such as identification of the genes that affect fleece-weight, fibre diameter, or leanness of sheep, to applications of DNA tracing such as a saleable product that identifies a sample of DNA back to its source. The prime focus of the MBU has been on gathering DNA information to form the Sheep Gene Map. This sounds, and is, a clinical interest, but for some members of the Group more human interests underpinned this clinical interest. Miles, told his story:

... right now what would make me feel good would be if I could find a gene for facial eczema. The first case of facial eczema was in about 1887. Now its 2000. We've had that problem for 120 years. We are putting up with it. Other countries

⁵³ This offshoot was completely unanticipated. The patent attorney thought of it. The MCG had 5 patents pending in early 2001.

⁵⁴ It is difficult to say how many workers occupy the MBU because there are always students doing Masters or PhD degrees who come and go.

don't have that problem because the fungus that causes it is not found there ... and our company and our Government are saying that since it's only a New Zealand problem, if we had a great discovery, it doesn't generate money for [the CRI] or New Zealand, because you can't sell it overseas ... I would have so much satisfaction if I can do something which the farmers have been putting up with [for so long]. So that is more on the sentimental side because I know the historical aspect of it ... when we first discovered a ... gene could be involved in it, we tried to patent it. The lawyer said, is it worth it? \$15,000 a year for the patent and how much can we generate from the patent? We come up with no profit, you see...⁵⁵

The MBU's recent work on the Inverdale gene responsible for multiple births and sterility in sheep (*FRST Parliamentary Report*, 1999; Galloway et al., 2000) has been publicised nationally and was published in *Nature Genetics*, the journal with the highest international reputation in the molecular biology field. Another group in the MBU was researching the Booroola gene which also affected fertility. Others were researching leanness as a genetic trait, and the genetic resistance of sheep to internal parasites. (Internal parasites are a significant problem in the New Zealand sheep industry and are controlled by drench chemicals to which the parasites have become resistant.)

The funding of this Unit was focused on the close relationship between the sheep genetic map and the human genome. It is argued that this is a closer relationship than that with the 'mouse map'. (Most researchers studying human health issues use mice.) This link to human health and human reproduction was emphasised in the Unit's projects. For example, the way in which facial eczema damages the liver is of interest in human medicine.

The science groups that make up the MBU had no funding problems but were aware that they were riding the wave of interest on the part of biotechnology industries in genomics, and the belief that this was one of the areas of research that distinguishes a knowledge society from others (Hodgson, 2000). As Raewyn, a scientist, said:

... at the moment the molecular stuff seems to be the winner, but that's just the flavour of the month. I mean, I know the sustainable people think that they're not flavour of the month, but a few more Greens in Parliament and they'll all be the flavour of the month. I just realise now that even from the Government down, it's in-words that are the flavour of the month.

⁵⁵ Publicly funded research needs to solve problems that are "unique to New Zealand (and which others will have little or no interest in solving)" (ACRI, 2002: 7). RSNZ (2002: 2) emphasises that research should be for New Zealand's benefit. (Note that this is a national goal not a company goal.)

In this quote Raewyn has aptly described the inherent insecurity of working in scientific research.

This section has described the diversity of the work done by these science groups and their current position within the science funding system. Those working in the groups come from MAF Tech, DSIR or have joined the organisation since the formation of AgResearch, reflecting the breadth of their backgrounds. The selection of these groups should make the results of this research represent the views of most scientific workers within this organisation.

4.6 Conclusion

This chapter has justified the use of the ethnographic method, which, when used alongside an interpretive perspective, provides an appropriate way of studying the nature of work in an organisation, from the standpoint of the workers. It has described how I went about this research and given a full description of the structural features of the organisation studied. The nature of the work of the science groups used as case studies has been described and some of their other interesting characteristics have been presented in order to provide a background against which to position the emerging themes from the data that follow in Part B.

Conclusion to Part A

In Part A I have described how I came to do this research as a result of being a worker in AgResearch myself. I have positioned my research within the framework of New Zealand's restructuring of the public sector. Following this an explanation was provided of the methods I used. I described the perspective taken in this research, placing emphases on the interpretations of the actors of their actions and my observations of them in their workplace. Finally the organisation and the groups within it that I researched were portrayed in order for the reader to develop some feeling and understanding of them and their work. In keeping with an inductive approach appropriate to the use of qualitative methods, I next write of my initial findings, telling the story of why scientific workers do this particular work and the continuing impact of restructuring on them.

PART B: NEGOTIATION OF IDENTITY IN A TIME OF CHANGE

This part of the thesis explores the observations of working life in AgResearch and the data from the interviews of the scientific workers in the four case studies. Chapter 5 describes why work is important to scientific workers. The work of science practice and the environment of that work provides feedback to scientific workers which reinforces and maintains their identity or valued sense of self. I demonstrate what it is about work that is so meaningful to them and where this meaning is challenged by change. The irony is that if these workers did not care about their work so much, they would not be feeling so unhappy and discontented.

In Chapter 6 I give an account of the responses of workers to the changes they are experiencing as a result of the restructuring of science funding. It is these responses that are analysed further in Part C in the light of the academic literature on work.

PART B: NEGOTIATION OF IDENTITY IN A TIME OF CHANGE

Chapter 5: Why work?

Why do I do it? I enjoy it (Jane, technical worker).

... at times I get really excited about my work – really excited where I can't wait to get to work to try things out. And yeah, I just – I can hardly sleep at night thinking about that work. You feel wow, this is the best job in the world. In fact I always feel that (Len, scientist).

This chapter considers the ways in which the working environment impacts on a person's sense of identity by focusing on the entities or communities providing important feedback and reinforcement to scientific workers about their sense of self within that environment. I describe the feedback that workers obtain from belonging to society, the science community, their work group or team, and the work organisation. I also describe the feedback they get from actually 'doing' science. It will then be more apparent how the values and attitudes of these groups and the heritage scientific workers carry with them from their past, are in conflict or competition with those of the organisation currently employing them. The chapter concludes with a discussion of the preceding material.

There is a general understanding amongst scientific workers that if they wanted to make a lot of money this is not the kind of work they would have chosen. Work is expected to have a purpose, apart from remuneration. It is to make a contribution to something bigger than themselves such as society, agriculture, or science. This contribution has to be one they consider worthwhile, something that would make a difference. It has to be useful – to solve a real problem or produce a product that workers really believe in. This contribution could be serving New Zealand through agriculture or environmental sustainability, or adding to scientific knowledge. A contribution could be made by leadership, or having a vision for particular areas of scientific work. These purposes set up expectations for workers about what they hope to achieve by working. They have become part of workers' identities and are reinforced by occasions of positive feedback when such goals are achieved.

In sociological literature there is a general understanding of a distinction between two basic conceptions of the self. There is the self that is “unknowable to others” – an “indefinable presence” (Burns, 1992: 211) and the “subject-in-action”, that part of the self that may change through experience and interaction with others. Goffman calls the second conception “identity”, covering both a social and a personal identity – “those aspects of the self which are “in play” between the individual and society” (ibid.: 212). In this work I am focusing on the responses of individuals when this ‘identity’ experiences conflict between its self-image and the social expectations of identity communicated through workplace and Government policy. This situation is neatly summarised in this quotation from a chapter titled ‘The Recalcitrant Self’ in Goffman’s book *Asylums*. Goffman states:

In every social establishment, there are official expectations as to what the participant owes the establishment And behind these claims on the individual ... the managers of every establishment will have a widely embracing implicit conception of what the individual’s character must be for these claims on him to be appropriate. Whenever we look at a social establishment, we find a counter to this first theme. We find that participants decline in some way to accept the official view of what they should be putting into and getting out of the organization and, behind this, of what sort of self and world they are to accept for themselves ... We find a multitude of homely little histories, each in its way a movement of liberty. Whenever worlds are laid on, underlives develop (Goffman, 1961a, cited in Lemert and Branaman, 1997: 81).

The first source of feedback I consider is the sense workers have of contributing and hence belonging to society.

5.1 Feedback from belonging to society

This section considers the effect that society has on the making of scientific workers and its relationship to the feedback they receive from belonging to society.

Influences from childhood and adolescence have a major impact on identity and the formation of attitudes. What attitudes were prevalent in society during the time these workers were growing up? What was the influence of the education system on their later work? What messages did they receive about how to be worthwhile and useful members of society? How has their heritage influenced the attitudes they bring to their work – their work orientation? Scientific workers will have learned these values from, and in reaction to, the values of their families, their society (e.g., via their education), others around them, and from past working experiences.

When I asked Ron what expectations he had when he first looked for a job, he said:

I guess I was just looking for satisfying employment really - a sort of relatively stable, but satisfying line of work - a field that I enjoyed, that I was comfortable in, that I was skilled in and had a heritage in ... (Ron, technical worker).

I have continued to use the word 'heritage'. It symbolises the attributes of the past that are valuable to us that we wish to continue to respect and pay attention to. We are not just the person that you see now but have within us these attitudes from our past that make us the person we are. From Ron's quote there is the sense that it is these values that have contributed to the work choices we have made. There is something non-negotiable about this past but at the same time we are continually reinterpreting it (recursive) and making sense of it (reflexive). It is ever present to us (co-present). For example, Ron was brought up on a farm, but he may not have known how important that is to him, until he finds himself unhappy when the organisation he works for changes from an agricultural science research institute to a life sciences company. Even then he may not make the connection.

Many of the people I interviewed grew up at a time when agriculture was very important in New Zealand. To be involved in helping farmers to produce more wool, meat and dairy products for export was considered to be a very worthwhile way of contributing to society. This value still had a very high salience in the minds of many of those I interviewed, across all science groups, but for the W&S Group this interest in agriculture was a dominant theme (as discussed in Part A). One of the scientists in this Group was training in endocrinology and changed direction when he realised "this was never going to save sheep farmers from doom" (Craig, scientist). For some workers in other groups there are connections with agriculture and the wish to do something for farmers but it is not necessarily the dominant feature of their work.

The role of public service was highly regarded in society. As Government departments, MAF or DSIR provided scientific workers with secure and reliable employment while also serving society.

It [MAF] was a whole cushion that dealt with the agricultural sector because it was valuable. So it propped it up, kept it safe, and all the rest of it ... I had no problems with being 'of Government' - of something put in place that was important to New Zealand and important to the agricultural industry. It was a very clear - like the Reserve Bank or something like that (Grant, technical worker).

This ethos still is very much present among scientific workers. Jim (scientist) told me he had left his former job to take his present one because, “We were making discoveries and everything else, but it just wasn’t that relevant to New Zealand ...”. Dave (scientist) agrees with the changes in science funding to the extent that he does not believe the system should “provide sandpits for scientists to play in ... without producing any tangible benefit.” He makes it clear that this ‘tangible benefit’ was for ‘the nation’. Most workers had a clear commitment to working for the public good.

Most respondents had become inculcated with the values of the science community⁵⁶ while studying and had come to regard the pursuit of knowledge as making a valuable contribution to society.

Here is the chance I can do something worthwhile, you see. Otherwise I just find that science is almost like an intellectual pursuit where you can go round and round. You can generate your own problems and try to solve them ... At least I have an aim. There is an end-user to my question rather than just going round in circles ... (Mark, scientist).

All scientists interviewed have tied their pursuit of science to attempts to solve practical problems important to agriculture or environmental sustainability. For many, the pursuit of adding to scientific knowledge, rather than the contribution to New Zealand agriculture, has become the driving force. In this way the values of their past merge in to the rewards they are receiving at present from their practice of science and their membership of the science community. They can belong to both the world of their past and the world of their present.

Many workers emphasised ‘doing a good job’. As Brent (technical worker) said, “[It’s] important to do a good job, I think – to do the job to the best of your ability – do your best, the cub motto.” Ron (technical worker) would like to be remembered for “just a solid and sound effort through the years ...”. There was the assumption that if you did a ‘good job’ then you had that job for life. This contrasts with the younger generation of workers, those under 40, who have a different outlook on life and work than those who are older. They may love their work and be very committed to it, but they are also very emphatic about having time for following pursuits outside work hours. For example, Lisa (technical worker) states, “My outside work life is

⁵⁶ Even though technical staff would not be considered to be part of the science community (see next section) most had some university education, or were taught by someone who did.

more important to me than my work. So my main goals and ambitions are there actually rather than at work.” The feedback about identity for younger workers comes just as much from these non-work activities as from work.

In 1999 there was the possibility that AgResearch would change its name just when workers felt that name was beginning to mean something, to have a history. Rumour had it that the name change would not be linked to agriculture or science, upsetting those of an agricultural and/or a science orientation.⁵⁷ This encapsulates the importance to these scientific workers of making a contribution to New Zealand through scientifically solving practical problems of concern to the agricultural sector.

The second source of feedback I consider is the feedback scientific workers derive from their membership of the scientific community.

5.2 Feedback from belonging to the scientific community

The first part of this section describes how scientific workers come to belong to and maintain their membership of the science community. Who is considered to belong to it, and what is the feedback from belonging? The second part considers how change could come to this community through feedback.

5.2.1 Membership of the science community

Science provides a way for a scientific worker to feel valued. It is an entry path into the scientific community. Membership of this community, usually the community of a particular science discipline, can be gained by becoming part of the privileged discourse (Gramsci in Harris, 1992) through publication in the appropriate refereed journals and going to conferences, especially as a presenter or an invited speaker.⁵⁸

Many AgResearch workers did not think that the interests of science were represented at the senior management level of the organisation. The only representative of the approximately two thirds of staff working in science at the

⁵⁷ The name did not change because of the forthcoming election. If the incoming Government was to change from National to Labour there may have been a different attitude to agriculture, the National Party having been the traditional supporter of farmers.

⁵⁸ Tim, a business manager, thought that at any one time there were 300 letters from scientists “flying around AgResearch” justifying their trips overseas. He said there were only a few days in the year when he could talk to a certain scientist because he is always overseas, listing four countries this person was visiting that year (2000) to his knowledge. This indicates how much more important international connections are to this scientist than the work he engages in, in his local environment.

monthly Senior Executive Meeting (SEM) was one of the three Science GMs.⁵⁹ Workers were dubious about his scientific credentials because he came from a Farm Systems background, which they felt was not ‘science’. The CEO countered this by saying that he and the Science and Technology Manager were also scientists. This statement was met with incredulity. There was the feeling that neither of them had ‘practised’ science for a long time. Evidently, being in practice is part of belonging to the science community: “I stand entirely for scientific leadership – representation of science, leadership of science, and doing science. My belief is you can only lead science by doing it. You lead from the front, participating” (Eric, SPL).

If this is so, what does it mean to be a practising scientist? A cost of being promoted in an organisational system emphasising accountability is that a scientist has to take on more and more managerial responsibilities leaving less time to ‘do’ science. Rae (scientist) has found that she has redefined what it means to make a ‘scientific’ contribution, now seeing her job as facilitating others to do science:

... for a while I was really frustrated that I wasn’t doing any work, if you know what I mean. I wasn’t doing ‘real’ work, because I wasn’t at the bench. But I think I’m more at the point now where I realise that they’re [the staff I manage] doing my work at the bench So I suppose my typical day is spent more now trying to do things that mean their task is easier, or meeting with them and other people to get the work sort of sorted more (Rae, scientist).

Other science group managers set up special times when they can ‘keep their hand in’ as it were. Some come in to the lab at weekends (Owen, scientist). Others may work in the evenings (Mark, scientist). Rae (scientist) has made herself responsible for a particular, fairly routine procedure to maintain her skills. These workers are still seen as full participants in the science community, but are concerned about losing the feedback that work at the ‘coal face’ brings.⁶⁰

The science community is not a community of daily, social, face-to-face interaction. Contact is more likely to be by email or at conferences. Within their own environments, scientists may form small communities of those whom they consider

⁵⁹ There are many issues here. SEM was replaced by two groups, one concerned with policy, the other with operational management. The latter collapsed because the SPLs, who were included in this group, wanted to be involved in policy not just operational matters, demonstrating yet again that there was no-one - not even SPLs - really concerned about the internal organisation of the company. The focus was always ‘up and out’.

⁶⁰ Note that these are also responses to change.

to be their intellectual equals (e.g., E-Group). It is still, however, very much a ‘community in-the-mind’ or a feeling of co-presence that scientists have.⁶¹ As Euan (scientist) says, “... I think that peer review again is the audience that I work to and I’ve got some fairly ferocious peers who review mercilessly if you go off the rails.”

The standard way of gaining entry into this scientific community is by publication in a refereed scientific journal, preferably international, the more prestigious the better for your status. For example, research on the Inverdale gene was published in *Nature Genetics*, the most prominent journal for molecular biologists (Galloway et al., 2000). The first author said:

I haven’t been publishing much with Inverdale for a long time because ... anything we published would give away the location [of the gene] so I decided to keep it all to the one big one and just run it on the biggy.

Within the organisation, the job classification of ‘scientist’ is usually achieved after the completion of PhD studies; however, scientists themselves tend to see publication as the entry path. Two members of the E-Group do not have formal scientific qualifications but are now organisationally and internationally recognised as scientists. This gives them great delight and they still find it hard to believe. For one this recognition came about through the quality of his published work. The other gained international recognition (confirmed by publication) through his discovery of endophyte as the cause of ryegrass staggers (Fletcher and Harvey, 1981).

Hence, the traditional gatekeepers to membership are the anonymous peers who decide through the system of peer review whether a paper is worthy of publication. Within AgResearch authors are required to give a copy of a paper to their SPLs before it is submitted to a journal, with a list of those who have already commented on it to ensure that authors are not unwittingly giving away potential IP or commercially sensitive information. This is also a check on academic quality. Thus

⁶¹ Turpin and Hill (1995: 183) refer to the work of Hill, Fensham, and Howden (1974: 99) on the role of completing a PhD in the ‘making’ of a scientist: “... their early disciplinary training supported the internalization of self-concepts such as individualism and elitism and the construction of boundaries between science and other segments of society. The authors argued that the nature and process of the thesis served to socialize the student into professionalism but that this was a process in which the student was insulated from colleague or occupational reinforcement so their reference groups were often abstract. The result, they argued, was a socialization of the professional in an atmosphere of *virtual reality*”. Turpin and Hill continued, “Unless new experiences were in some way commensurate with these reference groups, these new experiences would be devalued or rejected ” (ibid.: 184).

the organisation is now acting as an additional gatekeeper. Decisions of who is 'in' and who is 'out' of the scientific community are complex and hidden.

Many scientists hope that by publishing, the work they have done will stand the test of time and be useful to future generations. George (retired scientist) kept publishing after being made redundant until he had submitted all the results of work accumulated over the years. Noel (scientist) mentioned the satisfaction he had when he was able to pass on to his colleagues some still relevant papers, published twenty or so years ago that had come out of his PhD. For many scientists there is a concern to publish a book that is a compilation of all that they have learnt over their career.

Status in the science community is also obtained through discipline choice and collaboration. Any research to do with molecular biology, particularly genetics, and involvement in human health issues, is given the highest regard. When AgResearch carried out its repositioning exercise in 2000, 'agronomists' suddenly found this title for their work speciality was no longer a title to be proud of. Collaboration is an indication by a fellow scientist that your ideas and work will give added value to a programme. Until recently scientists have been free to choose their collaborative partners.⁶² The work on endophyte and the Inverdale gene is based on collaboration.

The science community provides a way of telling its members and outsiders whose word can be trusted or whose information is more likely to be reliable and objective. It is also a hierarchical community and many scientific workers, particularly technical workers, are excluded.

5.2.2 The role of feedback as an influence on change in science

A major part of the present change is that yet again the Government of the day is attempting to get the science community to do what it wants. Scientists, with their strong sense of autonomy and concern about freedom, do not like this interference. Some feel the direction in which their research takes them should be dictated by science alone. I observed that within AgResearch there was a resistance to the idea that the 'outside' world should have any say in things scientific. Garth, for example,

⁶² According to Alister Metherell (pers. comm., 12-12-02) FRST are stating that research is unlikely to be funded unless it is collaborative across institutions. FRST would say it encourages collaboration.

had experienced first hand the resistance to his ideas within entomology. His idea that disease played a part in the mortality, and hence the life cycle of insects, was still resisted in classical entomological circles. He is reluctant to allow Government policy (the outsider) to influence his work, however, he submits himself to the science community for recognition. He accepts feedback from within that community, but does not accept feedback from those who are not of scientific status. Kuhn (1970[1962]: 55-95) portrays ‘normal science’ and the scientific community supporting it as a closed system that only admits of incremental change. It resists revolutionary changes even though, according to his analysis, such change provides the dynamic that keeps science moving on. Kuhn pays little attention to non-science forces, seeing change more in terms of perceptual shifts within ways of seeing a particular scientific issue rather than through social and outside influences.

A member of the W&S Group named the MCG the ‘dinosaurs’ because of the belief that new ideas should come out of their own scientific community and research on them paid for by public funding.⁶³ Will (scientist), a member of the MCG, adopted the name ‘dinosaur’ with some pride. When someone put a small sticker of a dinosaur on his shared office door, the three scientists using this office left it there, indicating their acceptance of the name. In contrast, the W&S Group think their science should be directed both by concerns outside the scientific community and scientific ideals, and preferably paid for or subsidised by industry. I am not saying that this group values feedback from non-scientists more than scientists, but they are trying to listen to a variety of voices.⁶⁴ The E-Group accepts feedback from the science, agriculture and business worlds because commercial funding provides a better, more stable way of pursuing their scientific fascination with endophyte, rather than public funding. (See Hunt, 2002b, Appendix C.)

So do scientists and group leaders value feedback from clients and change accordingly? The answer would have to be ‘it depends’! It depends who the client is

⁶³ According to New Zealand’s Minister of Science and Technology, “If there is any scientist left in this country who believes that science funding exists for them, personally, and not for the knowledge they create and its appropriate transfer to the business community, the policy community or the public would they kindly go outside and retire” (Hodgson, 2000a: 8).

⁶⁴ Another example would be Craig’s concern that women, as the major consumers of wool (those who make the decisions about what their families wear and what household furnishings to buy), are not represented in the direction and decision making processes of wool research.

and the nature of the work. Most commercial work would be seen as achieving something a group knew it could do already and so such work would not provide the satisfaction of producing new knowledge. For all groups but the W&S Group, commercial contracts were seen as a way of subsidising science (MCG), doing more science (E-Group), not as a way of listening and responding to the outside world. (In general, the ‘business world’ is not one that I have found scientific workers feel they ‘belong’ to, so it is not included for discussion here.)

To conclude this section, as members of the scientific community, scientists can set up another value system independent of the organisation that is not available to other workers in the organisation – technical, corporate or support staff. This exclusive community can give them another reference point and allow them to be more independent and resistant to organisational norms. When I asked scientists what they valued most about their work, the reply was usually ‘scientific excellence’ and the respect of peers. When I asked how they measured scientific excellence I got a strange look as if I must be very ignorant! The answer was ‘by publication’. There was no mention of meeting the company’s strategic goals or producing a product.

In the next section I consider the third source of feedback – that from the sense of belonging to a science work group or team.

5.3 Feedback from belonging to the group or team

In AgResearch, workers can belong to different organisational groups such as science groups, and Occupational Safety and Health, Animal Ethics, and conference committees. In the first four subsections I will describe the cultures of the different science groups in this study to demonstrate how belonging to a science group played a very important part in the everyday life of those in the case studies. These groups, situated within a Science Platform (see Figures 4.1 and 4.2), provide a contrast to the scientific community, as a worker was placed within a group as part of their work. Such a group may come to feel like a team to some, providing them with a place where they are accepted, valued, liked, and needed. These feelings can be reinforced on an everyday basis, providing a person with very good reasons for going to work each day, or the exact opposite. The section concludes by considering the impact of SPLs’ differing styles of management on the sense of belonging of group members.

Because of the stability of workers within AgResearch, the present group leaders had chosen most group members. This in itself gave a worker a sense of belonging. Groups, in other words, were not set up to satisfy some Human Relations ideology on the part of the HR staff. If a strong team feeling emerged it was not intentional but a welcome by-product. Part of reason for the Invitation to Innovation programme (I2I) was to make clear that innovation was more likely if work groups included workers with a range of different ways of coming at things (e.g., as identified by the use of Myers Briggs Personality typing). No practical attention had been paid to this in the assignment of workers to groups.

Each group had its own distinctive heritage or story. It may be based on something internal to the group, such as the way the group was formed, or it may be a common external heritage such as a family background or interest in agriculture. Groups were situated within a local workplace shared by others in the organisation but individuals did not get much support outside their groups. There seemed to be no binding together across groups through the common experience of change.

In the next subsections I consider feedback related to specific group membership. To ensure the maintenance of confidentiality I have named the groups A, B, C or D and the name has been randomly assigned so, for example, Group A is not necessarily the first group described earlier.

5.3.1 Group A

Group A members received a lot of feedback from their team interactions. As workers in the Group come from many disciplinary backgrounds and chose to come together through an interest in the same subject, they had developed a strong sense of team. They were respectful of each other's talents and abilities and enjoyed this interaction and the contribution of their different disciplines. 'Creative abrasion' (Leonard & Straus, 1998 [1997]: 109) would be a good way of describing how they operated. Belonging meant being valued for your contribution to the team. This was not taken for granted.

And to me that's the big bonus about the situation – to be able to work on interesting problems with quality people. ... I wouldn't complain if I managed to do something for lots of accolades – no doubt – but what really matters to me is the few people that I've worked with closely, looked favourably at the work

we did together – as I do. So there are lots of jobs where you don't have that, so I think it's a privilege to have that framework to work in (Ken, scientist).

This valuing of each other was one way in which these workers' identities had changed. Some scientists in Group A expressed surprise about how they had found it so rewarding working in such a team, not expecting this to compare with the rewards from 'doing their science'. Technical workers did not play a part in this camaraderie. When members of the Group rather reluctantly realised that they needed to be organised, they chose to have a facilitator rather than a 'leader', emphasising their relationship as a non-hierarchical one between science peers. They were not an exclusive group. Other scientists came and went when they found that the subject holding the Group together did not offer anything to their science.

The commercial nature of a lot of the work of this Group gathered them together across campuses several times a year. They regularly fronted up to agribusiness companies to negotiate contracts. Their relationship with an overseas company had been particularly productive for them in this way, as it provided opportunities to demonstrate what they each had to offer. Each member of the Group could make a presentation to representatives of the client company on their visits in the presence of other team members which developed a greater appreciation of what each person could contribute. Since the initial discovery that started this Group, such discoveries have continued and all members have contributed to this heritage.⁶⁵

5.3.2 Group B

Group B exemplified the very positive role group interactions can play in providing feedback about work and self. The physical layout of the Group's laboratory in an open plan design facilitated informal interaction. The lab was a large, very open, light space. It was very informal with workers being trusted to obey lab rules and protocols whenever it was necessary for their own safety and the safety of others. The scientists' offices were placed on the far side of the lab so that they had to pass through the lab to reach them and could interact with technical workers on the way. There was an awareness, demonstrated in the lab design, that personal space was important. Each technical worker had their own 'space' and bench, plus access to the

⁶⁵ I cannot say whether a group with a 'story' has less sense of 'belonging' than one without such a story, as all the groups in this study had their own heritage.

areas that were shared – including the computer corner. Computers appeared to be considered to be just like any other shared resources in a modern lab (with its dependence on expensive, up-to-date technology).

Each person was aware of what the others were doing and they gave each other words of encouragement and congratulations when a problem was worked through successfully. Kevin (technical worker) told me how he would shout across the lab to Lisa for advice. As he said, “I’m enjoying the people I’m working with. I really like working in the lab.” These interactions showed the cooperation and trust that the members of Group B had for each other. They demonstrated a consciousness and deliberation about the quality of their interactions not apparent in other groups.

I show them [others in lab] that I value their skills and their knowledge/work, by, you know, recognising that they’re an expert in a certain area and asking them, listening to what they say, and making use of it, rather than just asking and going ahead and doing it how I was going to do it anyway (Lisa, technical worker).

Alongside this interaction there was a respect for each other’s autonomy. All workers were managed in the same way and given responsibility for their own projects whether they were the most humble dishwasher, technician with polytechnic or university qualifications or scientists with a PhD. As Jane (technical worker) said, “I plan my day and I ... do it the way I want to do it. Yeah.”

There was a strong emphasis on sharing and peer feedback amongst all workers and it was obvious to me that they tossed ideas about and learned who was good at particular techniques, so workers knew who to ask when they themselves needed to learn something new. There was the expectation that a worker was responsible for becoming competent in the techniques required to do their project and did not pass it around other members of the group who might specialise in a particular technique (except for the routine work that went to external agencies). Workers seemed to give advice only when asked. Kevin (technical worker) talked of how it was important for him to try to solve his own problems first before asking for help and this was a common pattern. This atmosphere actively encouraged learning. It was supported in other ways. For example, Nan (technical worker) mentioned how, following a conference she would be expected to share any new developments.

Group B as a whole celebrated and enjoyed the successes and achievements of others. Its members liked to think that even if they were not involved in the actual work that has produced the success they contributed to it in some small way by their participation in the lab. "... like with [Rosie's] success – I mean that reflects back on everybody else. She says I've helped by doing all the dishes and things so that makes me feel good, acknowledged. You know you're part of it" (Olga, Technical staff).

The social space for tea breaks was very confined, making it seem very intimate and personal. Workers had been able to establish communication in such a way that two or more conversations could go on over each other simultaneously! The SPL and his Personal Assistant (PA) were very accessible, the SPL taking tea breaks whenever he was there because he considered it important to be with his staff. This sociality was extended to gatherings outside work hours organised by a staff social club.

Workers in this environment valued their relationships with each other. The environment helped workers to be autonomous and in control of their work, while maintaining an atmosphere in which they were free to ask for help if needed. Each worker had projects and a place of their own, yet to get their work done they needed to interact successfully with others who shared their common spaces and resources. This atmosphere helped workers to feel that they belonged and were valued.

5.3.3 Group C

Group C was a very tight knit group.⁶⁶ As a whole this Group expressed a great degree of cynicism about the organisation, its management, and the system of science funding. It was an obligatory part of the culture to complain about the organisation and about managers.⁶⁷ Ironically this produced a strong team feeling, demonstrated by the almost compulsory attendance of technical workers and some scientists at tea breaks when they gathered in the cafeteria and formed a group almost

⁶⁶ I suspect that the Group needed to have someone to exclude to keep it together (Durkheim, 1966[1938]: 2-3, 10). This role was taken by Don, a young scientist, a difficult, talented person, who was not approached for help by other lab staff. His line manager did not say hello to him when he entered the lab or engage with him, yet did engage with others who were present. Don would frequently return from morning tea disgusted because the conversation had been about babies or Coronation Street. On reflection, this could also have been a way of excluding him.

⁶⁷ This behaviour did pervade the organisation. It was almost institutionalised, but it seemed more essential to this group. Yet they were very successful – scientifically and commercially.

impenetrable to outsiders. This also indicated the exclusive nature of this Group. The group met for pizza and games evenings, or for lunch at a winery at any excuse, and seemed particularly good at welcoming new people to the group.

Members of Group C had developed different roles over the years as they discovered and appreciated areas of expertise not necessarily linked directly with science. For example, different workers became associated with the leadership and coordination of ideas for funding applications; being the go-between who maintains relationships between workers; administration, occupational safety and health (OSH); setting up lab rules, procedures and protocols; taxonomy; and molecular biology. Once areas of expertise were developed they were not shared with others in the group but became 'owned' by the individuals.

In spite of the strong team feeling, there was also a definite distinction between the manager scientists and 'the rest'. Their ability to mutually cooperate was not enhanced by being spread across at least four labs on the one campus and scattered about in many different offices. In this environment, scientists were separated from the technical workers who usually had offices within their labs. The male manager scientists were discouraged from working in the labs by the technical workers and were seen to be an almost different species.⁶⁸

The distinction between scientists and technicians in our group – the scientists are a bit airy-fairy – waffling on All our technical workers tend to be quite – do something it gets done and things are not left lying round or half finished ... [scientists] just lack common sense I think What's blindingly obvious is completely lost to them (Dawn, technical worker).

As a result, these scientists sought time overseas where they had an opportunity to do their own lab work. A third scientist manager was happy to work alongside a technician whenever the latter was under pressure. Another scientist working by himself but supervising younger scientists and PhD students working on projects outside the ambit of Group C, found it stimulating working with younger workers. The communication from the scientists to the rest was not good. Lab space was always in high demand. Lab staff were not told of the arrival times of visitors from

⁶⁸ Ironically, once out of the lab a scientist may find it difficult to get back in! The technical workers have found that they get more work done and their work is more interesting without the scientists about.

overseas who needed lab space. Heather (technical worker) told me how male scientists would arrive with work that they expected to be done straight away without showing any awareness that technical workers might have other plans. Technical workers would complain behind a scientist's back but there was never any attempt to negotiate. The field worker would also just turn up with specimens for analysis without notifying lab staff. Technical staff received little warning of when scientists would be away overseas, a frequent occurrence.

The exclusive behaviour of this Group made them 'the group' noticed on campus. Two people, a business manager and a scientist, who worked alone outside established groups, managed to become included. The business manager told me that he consciously worked at it because he felt it was important to be part of this group. The scientist was able to demonstrate that he could add value to the Group's programmes. The Group manages to give others the idea that a person needs to belong to them to be taken seriously on the campus.

This Group had a strong 'heritage'. It was founded by its present leader and has grown over the years. Members acknowledged their dependence on him for his 'visionary' skills and his ability to acquire funding and were prepared to forgive him any other shortcomings because of this.

Gareth is a really, really good visionary. He's a pain in the arse to work with half the time because he has visions and you've got to make them work. But he's always looking ahead. So, for someone who is often unfashionable as far as their scientific-management requirement goes, he's always on top of the pile because he knows how to look ahead ... and what we've noticed is, say ... looking at [another campus] and our group, they have suffered a lot more than we have because they lost their visionaries. And they only had working stiff's like me. And they didn't have people who were actually sitting at the top and working out where all the groups were going to go (Will, scientist).

5.3.4 Group D

Group D's scientists had offices off an open plan area shared by the technical workers. This allowed the scientists to come out and talk to the others whenever they felt like it. I was not aware of the interaction going the other way in such an informal fashion. In other words, the scientists initiated interaction.⁶⁹

⁶⁹ It is interesting to note that when you work in an open office space you have no control over access of others to you. This is another measure of hierarchy and status (see Appendix D).

This group was very hospitable. They kept a biscuit tin well filled and helped themselves from it while going out to morning and afternoon tea together at the cafeteria. A person having a birthday was expected to bring along some baking or a cake. Good use was made of a coffee percolator. At lunch-times they all went their separate ways – walking, to the gym, eating lunch at the desk, playing badminton.

Technical workers in Group D provided the physical labour required for fieldwork on an AgResearch farm. This could require all technical workers on some occasions, particularly as a trip was more economical if everyone went to attend to their own projects. I observed Group D in action in the field on three occasions. Catching sheep, for example, required a systematic approach in which each person had a part to play! There was an unspoken agreement that the person whose project was the subject of the work, was in charge of ‘the labour’, though there did not seem to be a need for many instructions as each had an area of expertise. Consequently, they had the satisfaction of being part of a team where their expertise was implicitly acknowledged. The scientists rarely took part in this fieldwork and when one did, it was considered a special occasion.

I was impressed by the technical workers’ concern for and treatment of the animals in their care. I have unforgettable memories of watching them rubbing the noses and talking to calm distressed sheep strapped on their backs in cradles while being artificially inseminated or receiving embryo implants. Some of the comments were: “We’re just good friends” (Grant). “You’re a big-hearted sheep aren’t you?” (Brent, rubbing her on the nose.) “Come on granny” (Grant). “Hello dear. How are you?” (Brent.) They demonstrated a deep understanding of animal behaviour.

The technical workers in the group showed great loyalty to each other when the time came for one of them to be made redundant during AgResearch’s repositioning exercise. They chose to accept a reduction in hours rather than have this happen. However, one person decided to resign rather than to work in this stressful, uncertain environment which gave no indication of getting any better. Members of Group D share a common heritage in their interest in and concern for sheep farming.

5.3.5 Attitudes of SPLs

The feedback of Science Platform Leaders (SPLs) to the groups in their Platforms played an important part in group morale and attitudes. SPLs were the go-betweens – the managers who represented their groups to the next levels up in the organisational hierarchy and represented the organisation to their groups. They can act to make workers feel they belong to the organisation or they can isolate them and discourage such loyalty. I suspect that the behaviour of SPLs was not conscious or intended to produce particular results and so it is difficult to say whether their impact was intended or has had unintended consequences.

Only one SPL said what a great lot of people he had in his Platform and how his primary concern was for them.

It's very important to me that I am valued by the staff that I look after. I value their feedback more than I value feedback from above to be honest. I'm one of those people that tend to not look up too much. I seem to worry about those below me rather than above me in the system (Jack, SPL).

Another SPL believed that his job was to stay out of people's working lives as much as possible and let them get on with it. This 'hands-off' approach supported workers' autonomy to the maximum extent. He also had a primary concern with science excellence. So the group in his Platform had been able to 'do their own thing' and became a closed entity. A third SPL had a vision of how he wanted employees to 'be' that fitted with the organisation's strategy for the future. He was very concerned with 'out there' rather than with what was going on in his Platform. Another SPL was perceived in negative terms. Members of the group in his Platform did not receive any positive feedback from him. They talked of him in violent language – not in terms of how they felt about him but about what he was going to do to them. "He's visiting us next week to give us another hit around the head." "We've just had another beating up." "He's coming to knock some sense into us." This affected the morale of the group, particularly of the scientists.⁷⁰

5.3.6 Conclusion to section

The feeling of belonging in a team is very complex as is illustrated by the different experiences of those in these science groups. Group C, for example, was internally

⁷⁰ "No passion so effectively robs the mind of all its powers of acting and reasoning as does fear" (Terez, 2001: 3, quoting Edmund Burke).

stratified yet exhibited a strong team feeling. In other groups there were also quite strong distinctions between scientists and technical workers by virtue of both the physical separation of scientists in separate offices from technical workers in shared offices, and the more formal, restrained and respectful access by technical workers to scientists, even within a relaxed relationship. So belonging in all groups contained an awareness of status and fit within the science hierarchy.

A group can provide a working environment which challenges workers in a way that makes it easier for them to learn. It can do this by providing an environment of respectful sharing of skills, an appreciation of where individual work fits in a programme, and an appreciation that workers like to be responsible for a whole unit of work. Group B and C illustrate this contrast. In Group B all these things were happening. In Group C they were not and workers were not as happy. In Group A (among scientists), Group B, and Group D (within the group) there was a feeling, even if it was not often stated, that everyone's contributions were valued and appreciated but the workers in Group C did not get this feeling to the same extent.

In all groups, individual autonomy was strong and supported except in Group C where it was confused. Technical staff in this Group were expected to work without knowing how their work fitted the whole, a form of extreme autonomy. At the same time they were expected to disrupt their planning without warning, demonstrating how little respect was being shown for their autonomy. In most groups it was presumed by line managers that workers would just get on with the job: "... well, my management style is ... let people find their own way to heaven" (Dave, scientist).

For all workers the feedback gained from belonging to their group was very important. In a sense, members of these different groups are just thrown together by their work and have no reason to get along. Obviously if they do their experience of work is enhanced and enriched. Group members have the chance to become part of a unique group story that has a past and will continue into the future.

In the next section I consider ways in which scientific workers can get feedback from their actual work. I describe how the very 'doing' of science provides workers with a sense of achievement and satisfaction and reinforces their sense of self.

5.4 The work of science: Feedback about identity

Most scientific workers I studied received such rewards from their everyday science practice that they did not feel it was necessary to participate in any other organisational activities. Why is this feedback powerful? This section answers this question by describing how science practice, particularly experimentation, provides feedback and reinforcement of a worker's identity;⁷¹ how technology can contribute further to the rewards of this work; how scientific work can be packaged so that it has a process and an endpoint both contributing to a workers sense of well-being; and finally, the advantages and disadvantages of working in a scientific environment which places a great importance on autonomy.

5.4.1 The everyday work of science

Most of the work carried out by the scientific workers I studied revolved around experiments either directly, through doing experiments and writing experimentally-based papers, or indirectly, through collecting literature to provide information for future experiments or to explain what was happening in present ones. An experiment is an important part of the scientific method.⁷² It provides an empirical, deductively-structured way of testing a theory. As such it provides an ideal unit of work over which a worker can have complete responsibility and autonomous control of what is done and when. If well managed, a worker can have the satisfaction of seeing how their experiments fit into a whole programme. An experiment may provide feedback about identity because it may give a worker clues about where to go next, providing another part to the solution of the puzzle they are solving, making them think. These workers see themselves as problem solvers. An experiment produces a result, informing a scientific worker whether they conducted the experiment correctly, thus demonstrating their competency. Ken talked about how the practice of science provides feedback without the need for any other human involvement, reinforcing his feelings of autonomy:

I certainly like working in a scientific discipline where the test of your ideas is going to be experimental – is about something out there, not just about the self-consistency of the ideas or ... not just about how many people you can get on

⁷¹ Ayree (1992) uses feedback from the job itself as one of his indices of job satisfaction.

⁷² Most of the work of the groups I studied involved a search for 'cause and effect' knowledge. In other words hypotheses were developed from theories and tested by the manipulation and control of different variables in order to establish cause and effect relationships. Some groups, particularly ecologists, did do exploratory, inductive work, but they still used systematic and ordered methods.

your team and push against the other lot ... I like to be working in an area where there's that discipline that your ideas are going to be put to a test that's not just somebody else's opinion. I suppose I believe in truth, which is a bit old hat, huh. We might actually find that little bit of it Chemistry in many ways is a quite robust and well developed science and ahh, the questions you get to ask when you put this chemistry into a biological context are often much bigger, if you like, or open-ended. So yeah, it's an intellectual challenge that isn't just an intellectual game, if you like (Ken, scientist).

Ken's quote also describes his larger goal – to find 'truth' – and his need for work to have some practical goal rather than to be just a 'game'.

I now describe the differences in work of the different groups under study in order to explore the many ways in which feedback from science reinforces and adds to aspects of identity. A large programme may involve many hundreds of experiments in the laboratory and/or only a few in the field. Some groups do not do many experiments as experiments are an indication of a more mature science. Instead their science may be more exploratory in nature (inductive) and involve the collection of data in a systematic fashion in order to see what is there. Having a clear hypothesis was of particular importance to one of the scientists:

Yeah, a major influence early in my career was the thought that you had to have an hypothesis and test it it's sort of like a work plan. You come up with a hypothesis and you collect data that is directed at answering that question and by the end of the experiment you either have answered that question positively or negatively – at least you've got an answer ... whereas other people just collect stamps and at the end of their experiment they don't really know one way or the other about their original idea and they've got a thousand other ideas ... (Colin, scientist).

This scientist was not impressed by exploratory research.⁷³

The W&S Group has experiments that may cover many years as particular sheep breeding groups are followed. For technical workers in this Group, the division of labour was across different aspects of work. Grant, for example, was in charge of fieldwork but called on the others for help whenever required. (Grant designed the sheep yards at Winchmore.) Another was responsible for databases of literature and photographs. The managing scientists spent their time in administration and planning and rarely got into the field. Workers in the W&S Group saw themselves as flexible,

⁷³ In fact this is part of status in the science community. Recently physics (until superseded by molecular genetics) was seen as the queen of the sciences being considered the 'most scientific' (Nelkin and Lindee, 1995), and something like ecology which is more systems focused and reliant upon less controlled data gathering has had lesser status (pers. comm. Euan Kennedy, 14-6-01).

adaptable and able to take up any challenge that came along, as they have had to do over the years.

So, I've got some basic grounding in research skills and it's easy enough to go to the literature and learn up about the new area, and then discard that information when it's not wanted The good times are the times of change – when I'm learning new stuff I enjoy more working in new areas and the rapid learning phase when you go into a new area (Dave, scientist).

Experiments in the E-Group were of many different kinds because of its multi-disciplinary breadth. Each scientist could be completely autonomous in choosing what they offered the group. They did not need to compete for publication. Different endophyte strains have to be tested in the field in experiments lasting three years or more. The first year is taken up with the establishment of the grass cultivars, then in later years the effects of endophytes are tested on grazing animals. Grasses produce endophyte under hot summer conditions and these conditions were simulated in tunnel houses. This was hot, dirty work for the technical workers, as they gathered blood and other samples from sheep. Plant breeders and agronomists associated with the programme had experiments outdoors or in glasshouses. Mycologists and biochemists worked in laboratories. The relationship between these different experiments required complex, long term planning as seed supplies, endophyte inoculation and so on needed to be coordinated with the requirements of others. It was important to scientists whose experiments were field oriented to get outdoors as much as possible and not just leave this to their technical workers. All the other scientists spent time at the bench.

The MCG was dependent on the seasonal supply of grass grubs and other insects and organisms for its work. Most technical workers worked in the labs on experiments to do with bacteria pathological to grass grub. Work for several of the lab staff was divided according to their skills. For example, one technical worker was responsible for the routine work of testing soil samples for any bacteria or other microorganisms with potential as biocontrol agents, while others with higher qualifications did microbiology and molecular biology and had their own individual projects. One scientist mentioned how he likes to see the a commitment to science demonstrated by workers in this Group:

I think the thing I most value is the commitment ... and I do think that we do have that ... it is at times a bit pressured so it means doing things to get things

completed - self sacrifice, loyalty! (laughs) Umm, yeah, that's it practically and I think they [my staff] are pretty good. And I think we do actually have a lot of it. The lights at night burn ... (Graham, scientist).

The MBU did lab experiments in molecular biology, microbiology and biochemistry which could be planned over a reasonably short time frame. Most technical workers ran five or six experiments concurrently. They were solely responsible for their own experiments, were aware of what they needed to do, planned it themselves, and had an idea of a larger time frame. Their experiments could contribute to a programme that had been going for many years. For example, the Inverdale gene success came from a programme started in the late 1970s (Easton, 2002). I found that workers in the MBU knew where they fitted and what they contributed. Manager-scientists in the unit spent most of their time on administration but found time to do some experimental work, reinforcing the value of the work of the technical workers.

There were many aspects of feedback from science practice that were common to *all* groups. Firstly, it was particularly important for researchers that their work was considered accurate and trustworthy by their peers:

I'd like to think that my results can be trusted and that there's not too much doubt that I've made a mistake. I mean it's always possible but umm, yeah ... I think I know more the implications of making a mistake so you are more careful. You know that down the track it's more likely someone is going to come back and look at your results for whatever purpose - usually to validate something or rule it out, umm, so you know that that's a possibility so you want to be careful that you do get it right (Lisa, technical worker).

Most were extremely aware that their work produced part of the knowledge required for the work to move on and if they made a mistake the impact on their work and the work of others could be considerable. They all had examples of working on a project in which they had made assumptions from prior work about where to start their experiments and had found later that the assumptions were not correct. For Kylie this meant six months of her PhD work was of no value; she had to find a new topic and renegotiate with her scholarship providers. Mark (scientist) had to go back over many years of experiments to discover why his work was not finding what he expected it to, until he reached a point where he felt a decision made many years ago about sheep breeding for the particular characteristic he was looking for was actually wrong. The method used for selection at the time with the technology available then, was just not accurate enough.

These examples, taken from my field notes and interviews, indicate the importance of trustworthiness, honesty and integrity as personal qualities required for good science. Workers need courage and integrity to admit to mistakes and move on. They have to be able to trust the work of others if at all possible, otherwise their own work would never be able to happen. Knowing that their own work is trustworthy indicates to them that it has some permanence within the history of their research area.

Secondly, technical workers saw themselves as well organised in both a day-to-day and a long-term sense, and as hard workers with a practical, ‘hands on’ approach. They knew what was required and got on with it. The success of an experiment reinforced their knowledge of themselves as skilled people.

Thirdly, many workers spoke of their sense of curiosity and for some this was a drive (see also Sommer & Sommer (1997: 15)). They were people who needed to know!

I am a very nosey person. I need to know everything. I can't handle not knowing. I need to have the answers. I have always been told I should have been a lawyer or a detective or something ... So, that's just me. I am curious by nature (Kylie, PhD student).

Scientists saw experiments as filling in the larger picture, satisfying their curiosity and stimulating it further by leading them on to more interesting questions. The E-Group came together because of their curiosity about a particularly fascinating fungus, endophyte. Because it is involved in a plant-animal-environment interaction it is a problem which has many dimensions providing an intellectual challenge, but a practical application as well. As Ken (scientist) states: “I’m not sure that people in senior management necessarily have a clear recognition of what it is that motivates us – interesting problems and good people to work with.” Challenging issues in an area of interest are an important motivating force for scientists.

Fourthly, other qualities necessary in scientific workers are persistence⁷⁴ and resourcefulness in response to the many challenges presented by their work.⁷⁵

⁷⁴ Glassick from the Carnegie Institute spoke at Lincoln University on 31-7-00 on the attributes of scholarship. One of these was persistence.

⁷⁵ Persistence has also become a valuable quality in the search for funding. Angus’s (MCG) Marsden funded PhD was a proposal that was successful on its fourth submission for funding, indicating the way the scientists in the MCG persist with an idea if they think it is a good one. They are successful at getting funding but they do not say how many applications they put in. It may be that this group just puts in more applications than other groups, but gets the same proportion accepted.

They need to persist in trying to find out and understand what has gone wrong and keep trying different ways of getting around a problem.

I don't like things that don't work ... I try not to think of work at home but if something hasn't worked I'll think about it at home all the time ... even if it didn't give the result that we wanted, I would prefer we got a result so that we knew. If something doesn't work I take it very personally and I always think it's something I've done wrong and probably 50% of the time it is human error. But the other 50% of the time it is something else. It might be that one of the chemicals has gone off or the temperature in the lab did get too high. But it could be ... that it's something that I've done wrong so I have to work at it at least to eliminate that it was me, so that at least at a lab meeting I can say, this didn't work because this went wrong ... I don't ever want anyone saying that nothing ever worked because her technique was sloppy or she wasn't well organised ... (Nan, technical worker).

As an example of innovation and resourcefulness I was told of the method used by a science group to capture weevils to feed their parasitoids at times of the year when the weevils are difficult to find. On a sunny day they place a tarpaulin out on the grass and trap the weevils under it as they come towards the warmth. On a dull day they put out an electric blanket! Technology may be used in ways not originally intended (Akrich, 1995).

In the field, compared with the lab, there is a longer time factor involved as experiments may take several years. A scientific worker cannot afford to make a mistake in the design of an experiment or in its execution whereas in the lab, experiments have a shorter time span and something can be repeated until it is right. External factors such as drought, flood and seasonal variations over which the experimenter has no control, may cause delay or failure. The challenge and satisfaction may come from limiting the effect of unexpected happenings, such as Peter (technical worker) controlling an insect attack. In the lab there still may be seasonal issues because certain insects may only be able to be collected in certain seasons and it may not be possible to breed them in the lab.

Fifthly, another necessary quality for scientific workers is optimism. They need to be hopeful that they will eventually succeed in getting something to work.⁷⁶ In the lab one of the tactics they may employ to keep their spirits up is to have as many

⁷⁶ Alan MacDiarmid, a New Zealand-born scientist who has won a Nobel Prize, said most scientific experiments go wrong (Radio NZ, John Campbell Show, 8.30-9am, 30-6-01). He agreed with the interviewer, John Campbell, that scientists have to be optimistic people.

experiments as possible underway concurrently. This means that at least something is working!

Finally, scientific workers seldom have a single point of feedback. If you are reliant on science experiments for your feeling of value, they are a very risky measure,⁷⁷ but when an experiment does succeed, it immediately tells the experimenter they must have done things correctly. If this is in an area that has challenged the experimenter's skills and they have overcome many problems requiring all their ingenuity and creativity in the use of chemicals and equipment, success gives a worker such a feeling of satisfaction it makes all the struggles worthwhile.⁷⁸

... a highlight for me is when you spend several months on an experiment and then looking down a microscope or something and seeing what you've done actually worked and it's given you a result, and then you know, yes, then it's all done. And that's – you probably get a buzz for a day and a half, or whatever. And then it just goes back to reality again. Yeah. But that only happens about three times a year, 'cos things take so long before you finish everything. It's like building a house. It takes 100 days and then you've built it and you're happy, then you go on to the next one (David, scientist).

5.4.2 The place of technology

Technology can reinforce a worker's sense of autonomy, giving them control of a whole experiment from planning through to execution, to entering data into a computer and analysing it. In the past these jobs may have been divided between different workers considered experts at particular tasks. Technology can turn once exciting jobs into jobs that are routine and boring. In Group C, routine work has been passed down the line to the lowest technical worker while the others move on to learning more interesting techniques. DNA sequencing can now be contracted out so that workers do not have to be involved in work that has become routine. Technology can add to the feeling that science is objective. If something is untouched by humans then it has the aura of seeming more likely to be correct and outside human influence. It gives the data more authority, leading to workers questioning it less and becoming less observant in the field and the lab.

I sometimes wonder whether the human content that we try and eliminate to avoid errors might also be eliminating other personal insights ... that it becomes

⁷⁷ Behavioural psychology seems to fit here – random rewards are more powerful in their effect than regular ones.

⁷⁸ Again from behavioural psychology – the more difficult something is to achieve and the more problems have been overcome to achieve it, the greater the reward.

a set of numbers that are just channelled through things rather than you having a chance to interpret them. You know ... you are weighing sheep and if you're very involved in it, you are getting all sorts of perceptions as it's happening. Whereas, if it's just pushing a button, you are not necessarily taking notice of what's happening around you. And then you pull it on to a computer and it must be right because it has been captured correctly. I find that a little bit dangerous. But I can understand the scientist saying, "Oh it's good because no human has been in here making mistakes or reading numbers upside down ... (Grant, technical worker).

Technology can increase the feeling some scientific workers have that they are in touch with 'the truth' – something bigger than themselves. Workers enjoy being adept and skilled in the use of technology. It is something they can feel good about.

5.4.3 Process and endpoint

Keeping up their own records, such as lab books, provides a worker with feedback on what they have done and how well they have done it, as well as being a means of accountability. In 2001 a new policy was to be implemented⁷⁹ in which lab books were to be kept by *all* technical workers and signed off every week by a worker's line manager.⁸⁰ This was to cover any patent challenges. Some workers were not looking forward to this potential threat to their autonomy because having something imposed is different from doing it out of choice. Each worker has developed their own ways of keeping these records and it may not be particularly tidy or regimented.

Technical workers may never tell the scientists they work for how an experimental result was achieved. For example, in Group C results may be forwarded to a scientist on a spreadsheet via email without any interaction between them. Thus the work of technical workers may be invisible and never appear in a publication. A scientist receives a result, then incorporates it into their overall picture of the research programme. The work of many scientists is reliant on the work of technical workers and the electronic medium by which the results of this work are received, can distance it from the worker who did it.

It is important, as illustrated by the examples above, that 'the experiment' and a 'good job' provide work that is structured into achievable units over which workers

⁷⁹ This was after I left the research arena so I do not know if it was implemented or not.

⁸⁰ This has more to do with the organisational priority given to competing patent claims than as a means of accountability or feedback.

can exercise control. They can make such work meaningful by gaining satisfaction in seeing their work complete, even if they never hear about it again.

But the planning and then going through and executing it and then finishing it up and then having this sort of fairly nice tidy package that you felt like you were part of - that you had some sort of input into ... making sure that things happen and the results are there ready to pass on to the scientist - that probably gives me the most satisfaction (Grant, technical worker).

In Group A, some of the scientists have been surprised to find out how pleased they have been to see their work result in an end product that is out in the market.

I suppose nowadays that real highlight is that they are now going into commercial production ...so to actually carry through your science till you've got a marketable product at the end gives one a lot of satisfaction. And perhaps that is one thing with the new regime where the emphasis is on commercialisation, is a good thing. Ahh, but I think it has to be in moderation. In the old days you seemed to get much of your satisfaction in science from publishing a good bit of research and it didn't go very much further often, whereas now the new product is the dominant theme and perhaps it's a little too dominant (Jerry, scientist).

A particular way of completing a unit of work is to publish a paper about it, as described earlier. This can represent work done over many years. It can be disturbing for technical workers in particular, to see something that they have worked on come to nothing when the scientist involved leaves the organisation without publishing.⁸¹

5.4.4 The culture of autonomy within science practice

Science culture prizes autonomy. This can have two sides. Petra described the positive side of the 'autonomous worker' well when she said:

... everyone has their own standard of what they want, how they want things, so if things are working and working well, you feel good. I mean having some other people say - congratulate you - it's like the bonus, but it's often at the personal level, you're your worst critic yourself, to your own work. I mean, you always know how you stuff up things, or what you should have done. Yeah (Petra, technical worker).

A person who is most strongly autonomous will place greater value on what they themselves know and less on what other people say. They are more self-directed and self motivated.⁸² However, as Petra illustrates, they appreciate people giving them feedback about their work as well.

⁸¹ A technical worker would not think of publishing such work themselves.

⁸² "Frequently observed characteristics of research scientists cited in these studies include creativity, innovation, self-reliance and independence" (Turpin and Deville, 1995: 6).

The negative side of autonomy is a tendency for an autonomous culture, such as that in AgResearch, to place a low value on feedback from others in the workplace. While workers in general said they would like more feedback there were strong cultural reasons why it did not happen. Ian talks of how it was like when he first started in his job:

Interviewer: How did the way you were managed change over your time in employment?

Ian: It went from being really awful to start with ... when you first started you were just given an office, you had a job and there was no really clear role, you just sort of stumbled ad hoc, along the way.

Interviewer: Does it still happen?

Ian: Yeah. I still think that it appears to be a scientific thing, that new people come in and you get them an office and you're expected to develop a work path and umm, and I think some people really, really struggle with that. I spoke earlier about people learning to manage their time and I think that's fine once you've been on deck for a while, but I often think that really it's important when you're starting in your new job – or starting in a new area – that there's a bit of a support structure around you and you're sort of guided through it a little bit ... I'd imagine there'd be some other managers that say, "You're here. Get on with it." (Ian, business manager).

An environment which encourages autonomy and individuality is not one in which there will be a lot of feedback from others.

So nobody's going to help you around here. The only way to do it is to sit down and do the hard slogging and you know, I have some animosity from my fellow technical people – because basically I'm a technician – and those other technicians see what I've done and where I'm going and I get a wee bit of flak and it doesn't worry me ... and basically I couldn't care less. They can do what they like. I work on my own. I never ask them to help me. OK. Never. Not once (Ted, technical worker).

The science culture also tends to be very male (Keller, 1990[1978]). It is perceived as rather weak and immature to need other people telling you how well you are doing. Group C provides the best examples of such a culture. The experience of this group demonstrates a lot about feedback and the dominance of the group leadership in setting the culture.

Interviewer: Do you think the way you know you've done a good job ... has changed over time?

Graham: Yeah, only in the sense I would have been more responsive to immediate managers I think ... you know, happy little puppy, wags it tail, have I done a good job? - kind of thing, umm whereas I'm old enough now not to worry about trivial little things like that (laughs) (Graham, scientist).

The lack of feedback from the top has permeated through Group C. Gwen, a group member, indicated that she would like to get more feedback from her line manager.

I know if I've done a good job - I guess that in things like science it's easy because you get things published and that's recognition. It's nice if your peers recognise it too. And often that doesn't necessarily happen – especially quiet little [workers] who are beavering away in the background. ... Greg could occasionally say, “Oh, that was really well done,” which he doesn't do - ever. Umm, and that yeah, I could easily be satisfied with that. You know, I don't need awards on my wall or anything but just that really.

Gwen's line manager makes the assumption that workers do not need to be told they are doing a good job. I think because this scientist/manager does not need it himself, he thinks no-one else does either. He has an international reputation gained in part from the work done for him by others, and is getting his feedback from other sources that he values, whereas other workers may not have the same opportunities or may need different means of support. Angus has learned that as a PhD student, if he wants some feedback from his two supervisors, he has to go and ask for it. Heather (technical worker) said that if she says 'thank you' too often, she gets the impression that other workers in the group see it as a sign of inferiority.

Formal feedback through performance appraisal processes is part of an organisational structure whereas informal feedback is spontaneous. The latter just comes from the way people 'are'. Informality cannot be structured into a system. Can an environment encourage informal feedback? The way the MBU lab is designed as an open plan, encourages an environment of interaction.⁸³ Mark (scientist) mentioned how much he liked the spontaneous remarks others make about his work. However, not all informal feedback made workers feel good. Another technical worker mentioned how they were sometimes introduced to visitors to the lab:

People come into the lab and some of the scientists have said, “Oh, these are all the robots.” ... That really sucks. It doesn't happen very often, but it has happened and it makes us grit our teeth thinking, “Well, that's how you appreciate us. Thank you.” (Petra, technical worker).

Informal feedback is related to autonomy. People are free to give it. They choose to give it. All workers appreciated the formal feedback of the performance appraisal process and preferred that to nothing, but they valued spontaneous feedback more.

⁸³ This is what 'business incubators' are trying to do when they house people in open plan offices. It is supposed to be an environment that stimulates innovation and creativity (Hofbauer, 2000; Baldry, Bain & Taylor, 1998).

The relationship between autonomy and feedback is complex. Giving a worker increasing autonomy indicates indirectly that they must be a very trustworthy person. Chris (technical worker) said his line manager had never told him whether or not he had done a good job. This lack of judgement or reinforcement by a line manager, made this worker feel part of a collegial team (of chaps) rather than someone in a hierarchy. He was trusted as an autonomous responsible worker. Jane and Nan (technical workers) had sufficient autonomy to demand that their managers give them increasingly challenging work. It was part of their growing ownership of their right to be happy in their work and their right to negotiate with management. At the same time, this confidence had probably grown through the feedback they were receiving from those around them in their lab. Feedback does not have to be initiated by a person higher in the system. This peer support was a distinctive quality of Group B's technical workers. In Groups C's environment of little feedback, the technical workers just complained and did not take any responsibility for acting on their complaints.

As I have said before, nearly all members of the groups indicated they would like more feedback, particularly from their line managers. Because they usually get no feedback at all they have to assume that this means that they are doing their work well and presume that if they hadn't been someone would have said so. Part of being a professional and working in science is the expectation of a high degree of autonomy – that people will be self directed and self motivated. For some in this autonomous environment, usually the scientists, only certain sorts of feedback are given value, demonstrating how privileged discourse is indicative of membership of the scientific community. For others, particularly technical workers, the feedback from the actual practice of work can be very important because of the lack of other ways of getting this reinforcement of their identity and worth.

5.4.5 Conclusion to section

There are many forms of feedback received in the experimenting process. Scientific work can satisfy many of the reasons people had for becoming scientific workers in the first place. It can reassure them that they have made a worthwhile contribution to the things that are important to them – science, knowledge, the agricultural sector, or something that they believe in. It can tell them that they are helping to make a

difference in solving a problem of importance to some sector of the community, to their boss or to the company. It has used the skills and training that they have acquired over many years indicating that they made a worthwhile choice to work in this area. It has reinforced the personal qualities they would like to think they have, such as integrity and perseverance. It has provided them with opportunities to be innovative, to satisfy their curiosity and most importantly to have ideas and think.

Feedback is one of the mechanisms that makes the practice of science so powerful. Science gives people regular if somewhat random feedback and they become hooked. Kuhn (1970[1962]: 38) has described it as addictive! Feedback from science can be regarded as more reliable than people in the sense that it is perceived to be more consistent and objective.

In the next section I consider the ways in which senior management instructed scientific workers on how to belong to the organisation, and the feedback it supplied to them to encourage that belonging.

5.5 Belonging to the organisation

In this section I consider the part the company plays as one of the entities that would be expected to take a role in workers' sense of belonging. Firstly, I describe the 'listening up' culture which has developed as workers have learned that they are not expected to participate in company decisions of importance to them. This leads to a description of the impact of the demands for accountability to company and Government goals. I finish by considering the ways in which workers achieve company recognition. This section is placed to the end of this chapter in order to contrast with earlier sections, as will become apparent.

In a sense a worker belongs to a company by virtue of being employed by it. AgResearch, however, wants people to feel as if they 'belong' to it – that they have a sense of loyalty towards the organisation and identify with its strategic direction in a way that goes beyond the fact that it is the organisation that pays them. "The employee culture will be one which is aligned to the strategic direction of the Company" (AgResearch, 1998: 6). At present such membership feels insecure.

Part of what binds a person to a group or organisation is the feedback and rewards a person receives from belonging. A person will feel more positive about something that gives them strong affirmative messages about themselves. They will be less likely to feel as if they belong when there is an absence of, or negativity in, such messages. Any discussion needs to contain a consideration of the circumstances in which people do not receive feedback from others when there would be an expectation of it as a lack of response is strong negative feedback in itself. It implies that the person hoping for a response is not important enough, not valued enough for someone to spend time to respond to them. This has implications for the ways in which people ‘exist in’ the organisation and how they ‘exit from’ it.

What were the expectations this organisation had of its workers and how did workers learn about them?

5.5.1 Listening up

AgResearch management communicated its expectations of workers in many different ways. The most overt and obvious flow of information was downward. Through ‘listening up’ workers became aware of the beliefs, attitudes and orientation that the company expected them to have towards their work, to the company and to each other. They were to be “AgResearch people living AgResearch values” (Strategic Plan 1999: 9). ‘Becoming aware of’ and ‘embracing’ AgResearch values, however, are not synonymous.

When employees logged on to their computers each day (most employees had a computer solely for their own use) they were immediately confronted with a picture on their screen of a pleasant pastoral scene across which was emblazoned the company’s mission, vision and brand values statements. These informed them:

Our vision

Better life science... better lives

Our mission

Sustainable and integrated solution through life science innovation

Brand values

Leading edge, in touch and responsible

Other sources of communication were rather more infrequent. The major event confronting workers with the expectations of the company was the annual strategic plan presentation when the CEO and other staff from senior management toured the five major campuses, spending a day on each. A very attractive booklet outlining the major points in the plan was distributed to all workers. It had been through a long process to reach this stage. First, it was worked through at a Board retreat and written up by the Company Secretary.⁸⁴ Next the CEO would visit each campus and present the proposed strategic plan for staff input, although it was made quite clear that the main issue that concerned scientific workers, the strategic direction, was not up for discussion. Finally, it was sent to the Shareholding Ministers for their approval.

The format of the strategic plan presentation differed each year. In 1999 a video of the CEO, a corporate manager and the Board Chairperson speaking, was introduced. (In later years some staff were included.⁸⁵) This was followed by the CEO's power point presentation of the (mainly financial) history of AgResearch and the features of the strategic plan. The next part was an attempt to get staff acquainted with the plan in an interactive way through discussion groups and some prioritisation of issues.

The Green to Gold Strategic Implementation Network (see Chapter 2) suggested that there needed to be some regular communication about what was going on in the organisation. This resulted in each campus being visited by a member of the corporate management to report on the major senior management meetings held in the previous month. The Team Brief, as it was called, was circulated by email before the meeting to give people the opportunity to read it in order to bring up any issues they wished to clarify. And this was exactly the function it performed. As in the

⁸⁴ The Company Secretary, who is charged with the preparation of the strategic plan, revealed some dissent about its purpose at corporate level. At one of the Team Briefs (10th February 2000, Lincoln campus) he said that he felt the strategic plan was a matter between Government and the AgResearch Board as part of the governance and accountability requirements. It was not for the consumption of employees. He had been the Company Secretary since the inauguration of AgResearch and it was only with the coming of Keith Steele as CEO in 1997 that this changed and the strategic plan was presented as involving employees. The CEO saw it as a guiding document for the organisation's direction and hence it was the duty of employees to acquaint themselves with it in order to align their work to this direction. This understanding is now incorporated into the annual performance appraisal. (See Appendix E.) The involvement of employees in the preparation of the strategic plan is a common management practice and a way of trying to achieve employee buy-in to the company goals and direction (Kanter, 1999; Arnold, Rush, Bessant & Hobday, 1998; Eisenhardt, 1999; Flood, 1984).

⁸⁵ Ironically, in view of my later forced exit, I was in this video one year, supporting employee involvement in the strategic plan!

strategic plan presentation, the agenda was decided and the corporate manager was there to clarify issues, not to allow new ones to emerge.

One of the major messages staff received from these meetings was the company's emphasis on profit. Each Team Brief finished with a summary of whether the profit targets for the month and the financial year to date had been attained. Staff found this focus rather irrelevant. To them profit was removed from a programme's funding by corporate, leaving them with the operational finances only. They had little influence over profit, except by working under budget, something they did not intentionally do. "From where I stand it's a bit difficult to work out how I can help them achieve that [more dollars]" (Brent, technical worker). Staff inferred from these meetings that corporate was not very interested in science as it received little mention. This was thought strange in an organisation in which over sixty percent of workers were directly involved in science practice, indicating further the devaluing of their scientific contribution to the organisation. When this was pointed out to the CEO he referred to the 'science engine room' for a while. This was not appreciated. As one worker said, it gave the impression they were working in the bowels of a ship!⁸⁶

I first became aware of 'listening up' at the Team Briefs on the Lincoln campus. It became very predictable who was going to speak and even who was going to speak first. Most speakers were group leaders. I made the assumption that those who did not speak were 'oppressed'. When I asked those who did not speak why they did not, I was surprised to find that they did not wish to speak. They attended mainly as an information gathering exercise to find out what was going on in the organisation, this being one way in which they had the opportunity to gain information about how they could structure their work to make it more likely to continue.

Yeah, even if things were really, really bad I'd still go [to meetings], because information's power ... you've got to know what's going on to know where you fit or where things are going Team Briefs are the main way that I use [to learn about what is going on in AgResearch]... I guess, not so much talking but listening ... (Angela, technical worker).

These workers felt that anything they said would not make a difference anyway. Whereas I had thought of the Team Brief as a way in which the organisation could

⁸⁶ At the first strategic plan presentation, I wrote on a feedback sheet that I did not like being referred to as 'the troops'. It is to the CEO's credit that I did not hear him use that expression again.

find out what its workers were thinking and concerned about, as a place where workers could give feedback to the organisation, the workers saw it as a ‘passing-information-down’ exercise. There was no real encouragement of a two-way process on the part of management *or* workers.

A concern of many workers on the Lincoln campus was that the dominant voices at the Team Brief meetings would be the only ones ‘heard’ by corporate when these voices did not necessarily reflect the views of ‘the rest’ of the campus. The dominant voices were always negative and critical, and were those workers whom others felt were secure in their jobs.⁸⁷ One scientist described the Lincoln campus culture:

I get incredibly frustrated with the same few people grumbling about everything and questioning every single thing that comes along. And if they’re not asked they grumble and if they are asked they grumble. If there are changes made that they asked for in the first place, then they grumble (Colin, scientist).

As workers were apprehensive about the viability of the Lincoln campus it was felt that such negative perceptions created by those whose jobs were more secure, were not helpful in securing their futures. In contrast, the dominant voices on campus were proud of the reputation they presumed the campus had with corporate management. As Wade (scientist) said, “... if anything characterises this campus ... it is quite a high level of cynicism ... there’s a lot of bolshie-ism out there.” The culture was one of complaint (Bluck, 2001) rather than visible action.

Most people interviewed read the CEO’s Update. It was emailed at monthly intervals or more frequently when the CEO wished to communicate urgently with workers. This was appreciated as an effective method for the CEO to get information to all staff. Of course, it is very much a ‘passing-information-down’ medium. It was received in the belief that what was stated in any corporate communication was only what ‘they’ wanted you to hear. It had to be mulled over to discover what it really

⁸⁷ The organisational staff survey of 2001 was organised and analysed by the biometricians in AgResearch. It included a device to check out this negativity. The survey especially targeted 100 staff selected at random, and encouraged them to respond. Anyone else in the organisation was able to respond too but the responses of this targeted group could be measured against the ‘voluntary’ respondents. The former group showed a less negative response about such things as attitudes to the organisation’s direction and management. This illustrates how voluntary surveys are more likely to represent polarised opinions.

meant (whereas what is published in a science journal is ‘true’). The meaning of organisational communications was negotiated.

The information-based, listening up culture of the organisation, linked to accountability (see next section), is reinforced by the scientific culture. It is a familiar mode of thinking for many workers. On the one hand, scientists expect to be heard. On the other hand, those lower down in the hierarchy, the technical workers, expect to be told. Most of the latter have university qualifications, so they are familiar with the university system of sitting in lectures and not engaging very actively in the process of learning. This view of learning changes when a person does a PhD where they experience, hopefully, reasonably egalitarian interchanges between themselves as students, their supervisor, and their peers. A person then learns that their point of view is of value. Organisational culture can be seen to be partly like the science culture and partly different from it.

5.5.2 Reporting up – the culture of accountability

Workers in AgResearch are frequently required to demonstrate that their work fits organisational and Government goals. This demand for accountability has developed into a particular culture, which I describe in this section. One subsection is devoted to considering the role of accountants in keeping workers accountable. I conclude with a general discussion of accountability.

One of the roles of Government restructuring was to make recipients of public money accountable for its use in achieving Government policy. To this end, representatives of the recipients, usually managers, are expected to make reports and/or front up to special committees to testify on progress and achievement of ‘objectives’ or ‘outcomes’. Within an organisation this may be a monthly occurrence. For external organisations such as FRST, annual reports may be required.

The accountability culture requires that some workers, often managers, have to attend many meetings. In the organisational meetings in which I was involved⁸⁸ I was confused by the lack of preparation beforehand. My perception of this lack of

⁸⁸ Morale committee, Green to Gold.

accountability was endorsed at one meeting I attended, a video-conference, when those attending did not receive the material they were supposed to have read until the meeting was underway.⁸⁹ Before the meeting an SPL and a Science GM made comments such as, “What’s this meeting about?” indicating their lack of commitment to the meeting’s purpose – finding ways to improve staff morale.⁹⁰ It was as if meetings had to be seen to happen and there was some status in attending but what happened at the meeting or as a result of the meeting was not important.

At the science group leader level of management there was unease expressed about reports that had to be written and plans that had to be made, which were never acknowledged let alone incorporated into company policy. I was quite surprised by this so I looked up to the next layer of management, the SPLs, and found the same thing there. There was evidence for it in the next layer of management. When I spoke to Tony, an employee who has since left, he said, “This is the problem I have with the way Keith [CEO] and corporate operate. You don’t get any feedback. It’s like putting things up into a black hole”. I was visited by Jack Sommer who had been talking to the CEO the previous day. He said the CEO had expressed the same feelings about FRST and MoRST. The CEO was concerned because he was not able to establish a dialogue with them and felt as if he was up against a brick wall.⁹¹ Everyone in the organisation was listening up and those at the top of the organisation were so busy listening to the external environment, trying to interpret it and predict what was going to happen next, that no-one was listening down.

This ‘reporting up’ required by the accountability culture is also reflected in relationships with FRST, the main single provider of research funding. The leaders of FRST science programmes are required to write annual reports and Parliamentary Reports. A directive is circulated around the organisation reminding programme leaders that the reports need to be written by a certain deadline. When completed they pass through the organisational system on to FRST. The Parliamentary Reports

⁸⁹ I was particularly unimpressed by this because my report, which was part of this material, had been handed in a week earlier.

⁹⁰ An exception was possibly the CEO who appeared to be very concerned, but as chairperson he had not instigated procedures that ensured committee members had read and acted on reports from the last meeting or read the material for this meeting beforehand. I had to doubt his commitment also.

⁹¹ Pers. comm. 8-5-01.

are published on the FRST web site. There is no response to these reports, either from the organisation or from FRST. There is no engagement in dialogue or indication of further interest. A programme leader can get satisfaction from completing them but that is the end of it. Gareth (scientist) comments on this scene:

... there's a big difficulty with contractual research ... When you're six months into a project ... the idea might not be quite as good as it was when you started but umm, you've got another two and half years of money for it. ... you're hardly going to [give it up]- you're going to pursue that idea rather than - and you may bend it a bit - I mean there is opportunity to do that, but umm, but there is a difficulty I think - and a misconception ... that strictly defined contractual work gives you better answers, and I think probably it's wrong. I think setting the general objectives and providing a good reviewing structure actually gives you a much, much better answer, a bit more critical concentration on the problems rather than a huge amount at the start until you get the money, and then almost nothing till the end and then at the end, well as long as you tick the boxes, everybody's happy. And it doesn't work like that because even if you do that, you don't survive in the long term because all you've done is tick the boxes and you haven't positioned yourself for the next grant ...

In some areas of AgResearch, this 'listening up' or 'reporting up' could be considered standard practice. One of the most basic examples of it is the lack of 'thank-yous' throughout the organisation (as well as that identified within some groups). When a staff member sent off a report or some information by email to management, at whatever level, there was no response - not even a brief 'thanks'. The person was left wondering if the report was ever received. A lack of response meant that everyone spent time trying to make sense of what was going on: "This organisation is not strong on positive or negative feedback. You've got to actually be watching out for the signals for it" (Owen, scientist). It leaves the onus on the workers. They felt as if they did all the work! Such a culture provided very good reasons for workers to feel that the organisation did not value their input.

How I'd like to see it is that everybody had an influence – that everybody felt that they could put forward an idea and have it looked at seriously, even whether it was acted on or not, but to get positive feedback for coming up with the idea and umm, rational arguments about why it can't be implemented ... as opposed to the sort of black hole that we seem to have (Ivan, technical worker).

5.5.2.1 The role of accountants in the accountability culture

In this subsection I consider the relationship between accountants and accountability. Accountants have oversight of groups' finances and time use. The word accountant would appear to be related to accountability. Accountants in AgResearch were strangely unaccountable to the managers of science teams with responsibility for

team budgets. The accountancy system used was generally acknowledged to be a very difficult one for workers to follow and understand. There seemed to be no value placed on this concern and no indication that the system should be changed in spite of there being others available. This resulted in some groups keeping their own system of running totals while others just gave up and became passive. It was mentioned to me many times how accountants were very reluctant to change mistakes that were discovered in budgets and how many fruitless hours were spent poring over balance sheets and trying to get mistakes corrected.

The biggest complaint about the accounting system was to do with accruals, the system incorporating money already received but not spent into the monthly balance.⁹² There was the perception that the accountants were permitted to keep as much of this money at the end of a financial year as was required to meet the profit targets set by Science Platform Leaders and the organisation as a whole. Operating money counted on for work in the new financial year, disappeared. One day I came across one manager almost in tears when this happened to him. He was concerned he would have to lay off a young staff member. He understood that the organisation had to make a profit - a profit of 15% on commercial contracts was acceptable to him – but he felt it was immoral for an organisation to make 30% on a contract. By the time group leaders found out about these accruals it was too late to do anything. Also the turnover of accountants was so high that new staff in the financial area would claim that they were not responsible for something because it had not happened in their time of employment.

The budget planning system was the source of many complaints. Group leaders were not able to forecast how and when they would be using their operational allocations, which led accountants to budget income and expenditure evenly across months, not reflecting the reality. There would then be complaints from corporate every year about the company lagging behind on its profit targets when it was obvious that the pattern of income had not been modelled in a realistic fashion. Scientists felt that their job was science and they had not been trained as accountants.

⁹² Accrual accounting is one of the unique features of the public sector restructuring in New Zealand (Nagel, 1997: 350).

Another way workers were held accountable was through time management. Workers were required to submit monthly timesheets recording the use of every six minutes in each working day. This issue was debated internally. The organisational response was that timesheets were required by FRST as a demonstration that funding was being used in the way FRST had allocated it across programmes. Also, timesheets were needed to calculate an employee's annual leave. Accumulated annual leave is a big cost to the organisation. (For the response of scientific workers to this system see Chapter 6.)

These issues are an indication of how scientists did not feel valued by the organisation because they had things 'done' to them rather than being part of a mutual negotiation in which their work, the work on which the organisation was based, was valued. To me, and to many of my respondents, this placement of the priorities of accountancy over those of science practice, challenged who was serving whom. Was the prime purpose of AgResearch to do science or to make a profit?

5.5.2.2 Discussion of accountability

... but you do feel like you're not doing your science because you're always re-writing little reports on what you did in your science (Rae, scientist).

Ironically, accountability seems to be about the choice between how much time is to be spent filling in timesheets, doing performance appraisals, writing reports, budgeting and following up accounting issues and attending meetings, rather than doing the work which supposedly earns the income. Workers were sent on time management courses and taught how to make lists, tick boxes and prioritise. In this way it could be said that workers are helped to see what they have achieved. But are they the things that workers wanted to achieve? According to my research, achievement and satisfaction involve more than this simple kind of feedback.

The managerialist approach produces a report-making culture as part of a demonstration of accountability, but reports, in the AgResearch system of management, seem to require no response. In this way report-making is not valued and is not seen as 'work' by scientists. The constant requirement for justification of what one is doing does not suit workers who desire autonomy as part of their work. Such workers want to be trusted and allowed to get on with it.

For some groups, the relationship with clients has proved more satisfactory than that with FRST because of the interaction involved.⁹³ Through interaction people were actually getting to know one another and relationships were being formed.

Good times I think, are probably the exposure to a wide range of external clients and the friendships that develop. So you not only build up a business relationship with these people but also you develop some good friendships, both in New Zealand and overseas (Ian, business manager).

An accountability culture has a need for measurements to demonstrate that accountability requirements are being met. Consequently, the focus goes on quantitative measures because they are easier to implement and practise, and, more importantly, can be compared in what looks like an objective way (Bowker & Star, 1999). For example, the company's profit for the financial year to date and its comparison with what was budgeted appears to be a straightforward measure. But is it really? It tells nothing about why profit is low or high this month, or how it was obtained. As I have explained earlier, the accountants use a method of dividing the expected profit over months in the year, calculated from group budgets, which bears no relationship to the way contract payments come in. Company profit never 'looks good' until the end of the financial year.

In trying to force an organisation such as this one to be accountable, tensions are created.

I mean, you have to face it, that's the way AgResearch is going and if you don't agree with it ... well complaining about it's not going to work All the strategic plan stuff makes me mad ... I mean I hate the word strategic. It's just a flaming plan for goodness sake! ... they say, well you've got to have a strategic plan about what you're doing. Well I mean, [X-name] never started working on parasite resistance because it was a fun idea. It was because it was a serious economic problem – let's solve it. And [Y-name] hasn't been working on reproductive genes just because he felt like it. You know everybody's thought about why they're doing it, or haven't been working on what makes caterpillars green or something, you know. Scientists have picked on projects that they do see a use for and I think they are probably making the decisions about what will be the best thing in the future ... I mean, AgResearch has been raving on about the Inverdale thing, about how wonderful it was. They never picked it as one of their winners, you know (Rita, scientist).

⁹³ John Lancashire (2001: 9) makes the point that scientists' contact with FRST has fallen off over the years, probably because corporate managers were not happy about it "because they regard funds as belonging to the corporate body rather than the science team".

Such accountability requirements imply that people are not to be trusted. Scientific workers take great exception to this because trustworthiness is an expectation they have of themselves as it is so important in their work of science practice (see Section 5.4). Some scientists take an implication from these requirements that scientists, experts in their fields, do not really know what they are talking about and cannot be expected to make decisions about the direction of their work.

I think [X, named scientist] is very good at it – manoeuvring would be the word somebody said to me. But the organisation doesn't realise that he's doing it for them, you know what I mean? ... He does what he has to do for them. He comes up with products. In the early days when there was no system he did products with other companies I've just found out that the provisional patents that we've written – somebody in corporate's been going over them with a fine tooth-comb to see what commercial money they can make out of it and they won't even ask us – they won't even understand them. You know, they won't have a clue. And they're spending all these hours going through saying we could do this and we could do that and – I mean I just think that's pathetic ... and if anybody – I mean [X]'s on these patents and if anyone can make them fly [X] can. He's done it before. He's got patents. He's got products ... there's almost that feeling that they think we don't know what we're doing. You know? I mean this wouldn't have happened if we hadn't known what we were doing. Anyway, it's almost, well this has now become commercial and we know more about this – but they don't. They're just playing round (Raewyn, scientist).

Requirements for accountability can imply that workers will not manage their finances and time efficiently – that they will 'rip the system' off. It is in conflict with scientists' sense of autonomy, integrity and freedom.

Somebody came down [from corporate] and was talking about this, you know, people skiving off early and stuff and I was just so cross. I just thought, everybody in this room – I looked around - is the sort of person who's pulled their finger for AgResearch ... I mean we were complaining about different aspects but we weren't anti-AgResearch, because they were all people who would really get stuck in but then, when they [HR] get all picky about these tiny little details it makes you think, oh well, I'm off home at 5 ... And if Keith [CEO] and those guys think, well, financially it doesn't look good. If they think that's all that counts, then they haven't got an idea of the work force and you know, they've let the finances rule It's hopeless. ... I actually think it's a lack of insight Well, they [HR] think you're skiving off with sick leave and they think you're doing all that, but you're not. If anybody started pulling a sickie in here, people would know, you know? That's the other thing the HR person should have said. You know, the evidence is that if you give people unlimited sick leave they use less (Rae, scientist).

Accountability has a short-term, end focus. It is prescriptive and controlling. Science is a long-term activity. Nothing is ever quite finished because it is part of a whole.

The investigation is never complete.⁹⁴ Science is process oriented rather than end focused.⁹⁵

One of the ways to be innovative is to allow room in science practice for serendipity to occur, to allow space to follow up hunches and explore possibilities, and to allow so-called non-productive time for reading and discussion. Even relationships with non-FRST (commercial) clients tend to be ongoing and open to negotiation. Accountability, on the other hand, requires all time to be 'productive'. There is a logic here, which says that those who are accountable do not have a part in drawing up the ways in which they are to be held accountable. There is lack of trust in those who are accountable - an unexpressed belief that they will abuse the system or become free-riders (Hodgson, 2000a: 8; Nagel, 1997: 355; Blau, 1964). This results in people being held accountable to a system they have no ownership of. It is not a system that people feel valued by.

5.5.3 Organisational recognition

This section describes how workers do achieve some recognition within the organisation in many different ways. Some of this recognition comes through remuneration and the provision of both resources and a working environment that enables workers to achieve their work objectives. This section demonstrates how workers could be expected to feel some ambivalence towards their employer.

How does an employee know when they 'really' belong? What is the feedback they get as a reward for or an indication of belonging? There was a mix of feelings about belonging to AgResearch. Some workers wanted to feel as if they belonged. Some feel it was a decision the individual worker made for themselves.

I belong because I choose to. I think everybody belongs here because they choose to because they could just up and off if they don't. Well it's easy to say - if they had jobs to go to. Yeah, I don't belong because of some touchy-feely thing AgResearch has tried to make me feel like I belong - like sending me tickets to the movies - yeah, I belong because I choose too (Raewyn, scientist).

⁹⁴ Rabinow (1996) describes that while some scientists who developed the polymerase chain reaction (PCR) process felt it was not good enough for commercial release others pointed out that Ford produced the Model T before the Rolls Royce!

⁹⁵ This conflicts with the requirements of FRST funding.

One scientist mentioned how proud he was to be part of AgResearch when his colleagues were speaking at an international conference. His pride was more related to the quality of the science than the organisation. He was proud to be part of such a group of scientists and be recognised by them. Many of the technical workers and scientists felt more commitment to their group/team than to the organisation, though some scientists had stronger links to their scientific community than their team.

There were some areas in which the corporate part of the organisation *was* demonstrating that it was listening to workers. An increasing effort was made to recognise the scientific achievements of workers where they coincided with the organisational goals. Rosie (scientist) was enjoying receiving recognition for her discovery and felt the organisation was making a real effort to celebrate such successes. Rosie's team demonstrated many things – science excellence, IP through a patent and the possibility of a product. All of these attributes were examples of the sort of work AgResearch wanted. The Annual Report (AgResearch, 2000a) also contained examples of the year's scientific successes after criticism that in the report of the previous year all the pictures (except those of the CEO and Board members) were artistic shots of arrangements of test tubes containing coloured liquids unlikely to be seen in a laboratory and with no scientific workers in sight!

5.5.3.1 Employment issues

An obvious way the organisation rewards a worker is by their pay packet – both the fact that they get paid and the amount. Some workers felt that that this was the only way they received any feedback about their value to the organisation.

I don't get a lot of sense within AgResearch of having done a good job. The origin of most of that satisfaction is myself rather than other people when I think of umm, the staff that I've worked with and the managers that I've worked with – there's not a lot. The most obvious, and you might say the most tangible indication that a good job is being done, is the salary rewards that I get from time to time, but there's not much other than that (Dave, scientist).

Apart from the annual employment contract negotiations, any extra remuneration a worker received was decided each year by the 'Individual Planning and Performance Review' (hereafter referred to as performance appraisal) carried out by line managers but within a format set up by the organisation. Final decisions on performance awards within each Platform were made by the SPL. Some SPLs had a generous

attitude towards their workers but one had been known not to use all the award money available to him and there was concern about this on the part of the Human Resources staff.

The performance appraisal forms first used in the year 2001 had no room for the worker to write anything until the end of the document, after the line manager had made their comments. (See Appendix E.) The form was all about the response of the manager. When this was pointed out by workers, this concern was not taken seriously enough to lead to a change to the form. The response was that workers could attach pieces of paper if they wished. By not incorporating an opportunity for comment into the document, the worker's voice was not given validity and power. A performance appraisal form became a document in which the manager's voice was dominant.

Discussion of the performance appraisal scheme needs a coda. The form contained a Section B that assessed a worker's behaviours and competencies on a scale through N – Novice, D – Developer, C – Competent, P – Proficient, to E - Exceptional. Some of the qualities being measured under the heading 'Personal Leadership' were:

- Committed to company strategy
- Demonstrates company values
- Positively influences others to reach organisational values
- Consistently strives for excellence
- Views change as positive and as an opportunity
- Takes responsibility for own decisions and actions

The measurement of these attributes in workers communicated a strong organisational determination to put into practice what it expected. However, this determination for worker ownership of the company strategy and values contrasted with the way in which this form was developed and introduced. A woman employed on a contract to develop this system travelled the country teaching workers, both managers and those managed, how to use it. When this was finished she left, her responsibilities over, having completed her contract. No-one else in the organisation had the same ownership of it or an ongoing commitment to see that it worked.

Performance appraisal did mean that at least a worker received formal, explicit feedback once a year and for this reason workers generally looked forward to it. It gave workers the only chance they had to address their concerns about how their work was going and what they should do next.

5.5.3.2 Resources – the work environment

In general, AgResearch workers appreciate the resources they have to do their work. Good resources tell workers that what they are doing is important and so can be regarded as feedback about their own value to the organisation.

... the farm is being very well run now. It's improving all the time. The standard of plant and equipment facilities is slowly, you know, it's not just a blank check approach, but each year it gets that much better We will put a spoke in but umm, again what I want isn't what always gets prioritised. But by and large if it's not this year it might be next year or the year after It's just unfortunate that a lot of the agronomy type work is going out of vogue just ... when the place is working more efficiently now than it ever worked (laughs) (Ron, technical worker).

Having a say in the resources that you use is also a measure of your value. In particular, a lot of workers took it upon themselves to do their own ordering with expenditure limited to a certain level before managerial permission was required. AgResearch provides its workers with good working environments and they are reasonably well resourced.

This section has described the feedback workers receive from the organisation about how they are supposed to behave in order to belong. In the next section I shall tie together all the sections of this chapter.

5.6 Feedback from working in science - discussion

Within AgResearch, feedback is a way of transmitting positive or negative value. Scientific workers indicated that they like to get a response to an action they make. Feedback tells them whether or not they are valued, whether or not they belong (included or excluded), and whether or not they have made a contribution. Feedback may tell them whether or not they are doing their job properly. It makes them feel more secure. Many workers said, "I must be doing OK because I'd hear about it if I wasn't." They would rather hear about it. Feedback helps people learn. Some

workers would rather have negative feedback than nothing because at least it means they are noticed.

Feedback is very subtle. If it is not given people look for it by picking up implicit and explicit clues, constructing it from their own perceptions. This may explain why the ‘rumour machine’ was so alive in AgResearch. Workers were desperately trying to find out what was going on. Any information would do rather than none. Rumours are also one of the ways in which people manage risk. They could be seen as part of the process of colonisation of the future as described by Giddens (1991). From rumours, workers learn how to manage themselves to increase their chances of survival in work. In the present environment, organisational senior management⁹⁶ acts as the mediator between Government and science while reaping some of the benefit for the organisation. It tries to be the motivator (carrot and stick) of getting workers to follow Government policy, accruing some benefit for ‘the organisation’ so it can pursue its own development, simultaneously better fitting itself to carry out Government policy.⁹⁷ Management also attempts to colonise the future because part of its role is to have foresight and make the future less chancy – to form the future rather than let it form the organisation. Corporatisation has made management so outwardly focused that it has lost track of the welfare/value of those who work for it. Everyone is accountable to someone above them but no-one is accountable to those below them. The future focus of the organisation does not relate to the past nor does it pay attention to the present. It does not acknowledge the recursive and reflexive process by which workers learn about themselves and their work.

Work provides opportunities for people to demonstrate to themselves and others what they can do and to receive recognition for it. In most work situations, people can demonstrate achievement through reaching a goal or objective, completing a piece of work, solving a problem, and fulfilling a purpose or dream. The resources of the workplace provide an environment in which people can achieve. The meanings workers make of workplace feedback are part of the negotiations they make of their

⁹⁶ I make a distinction between senior or corporate managers and science managers from the SPLs down, though this is a moot point because some SPLs act more as advocates of ‘management’ and others as advocates of their own science staff.

⁹⁷ The Government has CRIs in a cleft stick. It set them up both to fulfil Government policy and as companies to meet business goals.

own identities. Such meanings can confirm or bring into question the ideas that workers have about their identity.

As a scientist, a scientific worker may belong to the scientific community which provides them with relationships and international networks with peers, and with opportunities to achieve status and recognition through publication and other communication of their work. (Sommer & Sommer (1997: 12) support this with survey data from New Zealand scientists.) In the case of some scientists, belonging to this exclusive community can be very important to their sense of self.

Most feedback is focused on the day-to-day. It gives value to the day-to-day. In a person's everyday life they may receive feedback directly from the work they do – in this instance, the practice of science. Scientific work is organised in such a way that this feedback is very powerful and can, at times, be a closed system with little input required from other people. The scientific culture rewards the autonomous worker. If the resources (including the environment) are supplied then a worker can work at science independently and achieve much of what they require for their sense of well-being. Most scientists, however, are dependent on technical workers to provide the results that they are then able to use for their part of their work. For some scientists, the technical workers may be treated as just part of this resource.

The overarching entity to which workers belong is the organisation itself. An organisation, almost by necessity, gives mixed messages about what workers need to contribute to really belong. Senior management wants workers' loyalty and ownership of the organisational aims. At the same time it has to demonstrate to its workers who in particular exemplifies those aims and who does not. It gives Christmas gifts to everyone, pays everyone, and provides the resources for them to do their work, but at the same time it has to decide on a strategy to ensure the organisation's survival. This may mean 'encouraging' some workers whose skills will not be needed as part of this future, to leave. Management is faced with the dilemma of how to communicate and encourage workers to adopt values and implement a direction that it thinks is important. It has to consider how important workers' adoption is and what is going to happen to those who resist. Management can be covert or overt in the use of power. It can put organisational values in

competition with other values and ideas that workers may have. It can involve workers in the change process or it can just tell them about what is going to happen to them. On the one hand, the organisation provides very good resources and pleasant environments in which workers can work. On the other hand, management may not listen to or take notice of what workers say. It may tell them that to be acceptable workers they have to believe certain things, or do certain things, which clash with feelings that they have about themselves. The organisation's accountability culture makes it difficult for workers to feel valued, trusted members.

It is evident that the feedback from belonging to different entities may encompass conflicting values and rewards. Choices may be needed to negotiate some resolution of these conflicts. Belonging or being true to one entity may exclude another. It makes sense then that people will respond in such a way that the things that give them good feelings about themselves will be valued above the others and they will seek to maintain and perpetuate them. They will resist, ignore or adapt to the other, less valued options.

The negotiation of identity is obviously not a simple process! Another reason why it is not simple is that structural components both constrain and enable work to be done (Giddens, 1989: 25). Many scientists could be self-employed but they choose to work in an organisation because through it they are able to do the work they want to do, for all the reasons outlined so far, in an environment they prefer. Particular aspects of their past have helped them see the world in a particular way, and have given them particular orientations to work, for instance. These drive them to do the work they do but may also act as restraints in the present environment.

5.7 Conclusion

This chapter demonstrates that there are many reasons why members of each case study group are happy about their work. Through work they can make their lives meaningful and reinforce valued parts of their identities. At the same time there are aspects working against this feeling. Although most workers were very pleased to be part of a team and the feelings engendered by the team, these same teams did not necessarily give feedback to workers about their value. This lack of feedback went beyond the groups to the organisation. Very few workers felt the organisation valued

them. The very values the organisation was promoting gave messages to members that conflicted with who they were and the reasons they worked in the organisation. It made them question whether they belonged, particularly when the ‘listening up’ and ‘reporting up’ culture seemed to embody a lack of trust or discretion.

In a working environment such as I have described, which is so rich in possible rewards and reinforcement of established identity, an organisational management wishing its workers to identify with it and feel a sense of organisational belonging, faces strong competition from the other sources described in this chapter. Do workers want to change in order to belong to a work organisation if they can find other ways of maintaining valued parts of their identities and continuing in the work they get so much from? In what ways is it possible for workers to change the way they think of themselves in order to belong? How are they able to resist the organisation but still remain? Are the rewards from some of the aspects of work described above so strong that workers do not need to ‘belong’ to anything else anyway? How do workers act (or not act) as a result of the changing environment in which they work? These are questions for the next chapter.

PART B: NEGOTIATION OF IDENTITY IN A TIME OF CHANGE

Chapter 6: The responses to change

In this chapter I describe the situation in AgResearch as the organisation changed in order to fit and survive in the environment in which it found itself. This will demonstrate why workers had reason to feel insecure. They felt their jobs were on the line and they were confused because they no longer knew what was expected of them and what choices to make. As they ran the risk of the organisation's policies changing yet again, which they knew from experience was highly likely, it was important that their responses should be ones which protected them. By making the point that workers do not resist all change, as is assumed in most management of change literature, just parts of it, Dent and Goldberg (1999) encouraged me to think about what exactly it was that scientific workers were reacting to, and what change they accepted.

For these reasons, the first section in this chapter describes the initial responses to change, such as confusion, after the communication of the strategic plan in late 1997, and the second considers the more obvious ways in which workers adapted to this change, by changing employment practices, for example. In the third section, the more covert responses to change are explained as forms of resistance protecting workers' self-identities. In particular, the ways in which workers can distance themselves from organisational rhetoric are described in the fourth section while the fifth section describes the ways they resist features of the organisational structure such as the use of timesheets. The final section describes and discusses the particular challenges and demands business has made on the science culture and how workers have continued to emphasise science practice.

6.1 The first symptoms of the reaction to change

I think AgResearch now thinks it stands for a global life sciences company, which is something that I'm not that rapt with. I've never worked for an organisation like that and I can't identify with it and I think to a certain extent – to me – that would make us like the manufacturers of thalidomide or Round-up ready soya beans ... (Colin, scientist).

[AgResearch wants me to make] a transformational leap – [that] would be my ultimate answer ... to come up with something outside of where we are but relevant to science, to agriculture, which is very profitable. Umm, I guess that would be the ultimate but realistically I don't see that as me. I guess I see me more as working on something once some of these have been identified (Angela, technical worker).

In the previous chapter I described the AgResearch organisational environment as workers were introduced to the strategic plan and changes in the organisation to support this strategy. As scientific workers on the Lincoln campus came to know about my research, I was frequently asked, “What is going on?”⁹⁸ There was a feeling that I would have some overview that would help people understand the confusion they felt in reaction to the change in emphases of the purpose of their employing organisation. Those who were most confused were the ones outside the larger groups who were not protected by their group leaders. They were the people who went to the Team Briefs and other organisational communication events. Such a group was the W&S Group whose members saw meetings as a source of information to guide them on what they needed to do to continue working in the organisation. But they did not find what they were seeking.

There's people standing by with hammers and saws waiting to do something – to tighten something up or cut something off. They just need someone to tell them what it is and where it is. Umm, everyone is keen to help but they don't know quite how to go about it. I see quite a bit of confusion (Brent, technical worker).

My interviews with members of the W&S Group took place during the period (1999) when AgResearch was asking workers to come up with ideas for products which the company could develop (hence Brent's reference to 'hammers and saws'). Most of the group did not feel that this requirement fitted how they saw themselves, but one member of the group did come up with an idea for a product and was very disillusioned when it received little support and was referred to WRONZ, the opposition. It appeared that the organisation could not cope with the volume of responses from members of staff with ideas for products. Many found their ideas disregarded or not taken seriously. Some found that if their ideas were thought to have potential they would need to do further work on them in their own time and out of other budgets. This gave further justification for disillusionment and cynicism.

⁹⁸ Law (1994: 47) writes about being asked similar questions.

There was also the prevailing feeling of not being valued and having to justify your existence all the time, as part of the accountability culture.

The biggest frustration ... in the last 3 or 4 years is continually trying to defend our position to exist the way we are within AgResearch ... even though we're successful we seem to be constantly trying to justify the way we are currently set up. For me, that is frustrating because while you're trying to defend your existence you're not out there trying to get business. So that's for us, I'd say would be our [biggest frustration] – yeah, constant interference from the internal hierarchy (Ivor, business manager).

Many of those I spoke to on the Grasslands campus said they would not recommend becoming a scientist to their children because they felt a future in science would be too uncertain, and besides, it was not such fun anymore.

Many workers in AgResearch have been protected from organisational change over their employment lives. Promotion had been just a matter of 'hanging in'. For example, Eve (technical worker) started work in AgResearch by grass grubbing for three months and then the job just continued – she never went for a job interview. Some scientists were 'picked up' while they were at university by DSIR or MAF, and they have just carried on. These workers may well be very good at their jobs but change put them on the line in a way they had not experienced before. This situation made them feel very insecure. Staff morale dropped to a very low point in 1999 as was demonstrated by a staff survey at that time (Hunt, 2000).

In 2000 the organisation decided to reposition workers to better fit FRST's and the organisation's changing strategy. By this time AgResearch had changed its focus from being a food and fibre, biotechnology company to a life sciences company. Workers were assigned 'skills' in order for the organisation to assess what capabilities its workers possessed and what would be required for the future. This was done in such a rush⁹⁹ that SPLs (with possibly some input from science group leaders) had to decide what categories of skills individual workers possessed, without consultation with them. The senior management then announced that about fifty workers were surplus to requirements. For example, it decided that it employed too many agronomists. Those who had trained in agronomy suddenly felt like second-

⁹⁹ Management actions taken under urgency seemed to be such a regular occurrence that it must be considered to be either a strategy or an indication of lack of foresight and planning on behalf of management and HR.

class citizens and strived to think of other ways of naming their skills.¹⁰⁰ This resulted in an exacerbation of the feeling of insecurity as rumours swept the organisation about possible redundancies.

The title ‘repositioning’, given to this exercise, implied that workers would have the opportunity to retrain into an area of potential use to the company. However, in the event, very few people were found to be eligible and very few were able to join the ‘capability bank’ of those the organisation thought it could support because their capabilities would be needed in the future. The cynicism grew about AgResearch being ‘the employer of choice’ (as espoused in the Strategic Plan), especially when there was a campaign to recruit scientists from overseas for a new plant genomics facility at Grasslands. To its surprise, Human Resources was so inundated by overseas applications that the more expensive possibility of training existing workers into these skills was sidelined. It was assumed by HR that newcomers would not be carrying the baggage of past values and would therefore find it easier to align themselves with AgResearch’s strategic vision.¹⁰¹ The implication was that a person ‘was’ their skills. Workers were not given any individual help in deciding what they could do to upgrade their skills and the risk of this choice appeared to be have to be borne by the individual.

Organisational management may be aware that the organisation’s survival does not depend entirely on how well its staff work. Survival has more to do with the direction in which the organisation must head in order to ensure its own survival through maintaining its Government funding and developing IP for products in order to generate its own revenue. It could not continue to employ workers who had no

¹⁰⁰ When something is measured and becomes part of the bureaucracy, the reaction is for people to fit the structure produced by this measurement (Liz Stanley, *Stories, Lives and Feminist Research*, seminar in Sociology Department, University of Canterbury, 27 August 1998).

¹⁰¹ Ironically, I was talking to Harry (scientist) on 25-9-01 and he said the new scientists in the plant genomics area were proving very difficult to deal with. He had been part of a group drawing up research proposals for the next year’s FRST programmes. These scientists had no definite aims for their research and no time-lines. He saw them as very ‘fuzzy’ and very much into ‘blue skies’ or basic research, which just does not fit the CRI or FRST environment. Most scientists in AgResearch have an applied orientation and their research has originated in trying to find solutions to practical problems. These ‘new’ scientists, would have been employed to produce products within a short time frame, and would have been expected to identify with the organisation’s strategic direction more easily than ‘older’ staff. That this has turned out not to be so could be regarded as an unintended consequence of the AgResearch employment policy. It seems there are some past values the organisation may want!

funding, either commercial or public, and whose skills were not seen as being of use in the future, however good those workers were at their jobs. Most workers who leave the organisation do so through redundancy or enforced resignation. It is rare for someone to choose to leave except for those who are prepared to go overseas, or those who are young. This point was made at the retirement of one of the interviewees when her boss said in his farewell speech, that Fiona (technical worker) was one of the few people who had ‘chosen’ to retire.

This was the scene in AgResearch from late 1997 to early 2001, and what follows (Part B) are my initial, less theoretically informed, and what could be described as sometimes naïve, reflections on the data. As Law described it in his ethnography of a physics laboratory, the researcher does not ‘discover’ what is going on. The process of interpreting the data is “slow and painful” and is one of simplification and translation (Law, 1994: 48-51). In Part C, and in keeping with the chronological pattern of events, I will provide a more informed interpretation of the data, one which responds to further reading.

6.2 Adaptation to change

The purpose of this section is to highlight the more overt signs that some workers were adapting to the changes in AgResearch both personally and more particularly by changing some of the structural features of their work. The first subsection describes some of the personal tactics scientists practiced when they became middle managers no longer receiving the feedback that their science practice used to bring. As well they found themselves caught between the responsibilities to those they managed and those who managed them. The next subsection details some of the ways managers changed some workplace structures, such as the way workers were employed and where work took place, to make more efficient use of their funding. Then I describe how these same managers protected their own funding. The section concludes with a consideration of how workers adapt to the insecurity of the situation they have found themselves in. Sometimes it was unclear whether these signs of adaptation were also forms of resistance because they often meld in with the more covert techniques of resistance I describe later. All of these tactics for dealing with change enable workers to continue with their work. (I elaborate on this further in Chapter 8 when I develop models of resistance.)

6.2.1 When scientists became managers

The further you climb up the ladder
 The sadder you get and the madder ...
 (Excerpt from limerick contest to celebrate AgResearch's tenth birthday, 17-7-02.)

When scientists became managers they have found that they needed to change what it was about their work that made it meaningful and their ways of knowing that they were doing a good job. They started to be owned by the organisation more and had less time for their teams and science communities. They did not find this easy, as the limerick above implies.

Managers complained about a lack of feedback and would have liked to hear how they are doing from those around them. In the absence of this one way they could give themselves feedback was by having a full diary. In this way, managers could document what they had achieved. For example, it was apparent on a visit to Lincoln of one of the SPLs that he had set himself a timetable. Workers wanting to see him were assigned fifteen minute appointments. When I was contracted to the Morale committee there was a suggestion that on campus visits, corporate managers should slot in half an hour, or some set time, to 'mingle' with workers on an informal basis. Such informal interaction could not just happen. It had to be documented and timetabled (and so lost its informality).

Busyness is a way a worker has of conveying messages to themselves that demonstrate they must be very important. Busyness indicates that you have work to do. Busyness is powerful feedback. It is an indication of status and hierarchy. Those with the fullest diaries, and who are the most difficult to get hold of, must be the most important, and they rule when and where meetings are to be held. If someone of higher organisational status requests a meeting then a lower status person has to alter their appointments to attend. Thus meetings provide feedback to science managers, which they can no longer obtain from science practice. (See Appendix D.)

Another method of adaptation was to make lists that could be ticked off when they were complete. Rae (scientist) was trying to do this and was adjusting her vision so that she could still feel she was doing a worthwhile job.

See, I have lists up there ... You know, you can wipe one of them off or two, but Jim used to just put up the day's things and get them done. You go into Jim's office and there'd be five things up and three of them would be crossed off by lunch-time. Well at least it would make you feel like you're doing your stuff. You know, it looks impressive. Whereas I write up, must get the containment manual done – more like a hope on the board! (Rae, scientist).

Some responses to change can be seen as straight adaptation. Gareth's response to finding funding was to reframe the meaning of the funding process so that it served other purposes as well as being a means to obtain funding.

You know, we have to apply a lot of our creativity to grant writing and I joke that ... we put our most creative effort into writing grant proposals and I think it's not totally stupid ... they are very competitive and you have to have ideas very well formulated (Gareth, scientist).

For him, writing funding proposals was a way of planning for the future, making sure that the work his group was doing was going to help it get work in the future. It was a way of keeping him up with all that was going on in his field. It was a skill he had added to his list of skills and it was a skill he had become proud of.¹⁰² It had become incorporated into his science practice rather than being an add-on that was resented and not seen as part of core science practice, in keeping with the following limerick.

The job of a scientist is to find money
Do Science? Ha, ha, don't be funny!
We write lots of proposals
That end up in garbage disposals
Well, except those that may create a GE bunny
(Limerick competition to celebrate AgResearch's tenth birthday, 17-7-02)

Each of the examples above illustrate, albeit in different ways, responses to change. Senior management also employed tactics to encourage workers to see change from a different perspective – as being an inevitable response driven by the external environment, rather than as management's 'fault'. One such tactic was to make more information available about this environment. A large part of the Strategic Plan presentation in the year 2000 was devoted to it and it was one of the topics discussed in groups after the presentation. An employee working for the Marketing Manager collected relevant material on science, research, development and business off the internet and made it available every month in the form of an environmental report. The AgSystems Platform had a 'cuttings' section in their monthly report in which relevant material was posted for workers to read.

¹⁰² This approach contrasts with that of Colin (scientist). He thinks finding funds is something he is not good at and was not trained for. He gets a fellow scientist to write the funding applications.

Middle management were also picking up on this tactic. One of the SPLs had started redirecting the complaints of workers away from the company to FRST, as he saw it as responsible for much of the confusion and insecurity surrounding research funding. In this way he was able to align himself with the CEO and the AgResearch Board, as well as those in his Platform.

... I've spent a lot of time trying to smooth people's hair down around my group ... The morale issue – yeah, it plays a part. It's quite interesting - it's kind of a trade off. You can get good morale by being cynical - but then you've kind of denigrated the corporate. You can promote the corporate and get bad morale - at least you've supported the corporate. There's a kind of trade-off there. No, I think the important thing for me is to quit the corporate bashing and start saying, let's have a good hard look at the Foundation [FRST] shall we? ... and I think that's the right way of doing things at the moment (Eric).

As an SPL, he did not want people to see him as part of the problem. He sought the understanding of his staff about the situation he found himself in:

Interviewer: So what do you want from the people you work with?

Eric: Umm, professionalism, productivity, acceptance of the status quo. I want them to know that things aren't exactly hunky dory. I want them to know that I'm doing what I can and that I haven't made it like it is and really I'm in the same canoe as them ... And the big problem now is external to AgResearch, not within AgResearch. And we've got an amazingly hostile community of so-called leaders in New Zealand who seem to have completely overlooked the importance of primary industries and environmental quality. Therefore I feel that's really where we need to be applying our attention as an organisation, not tearing ourselves apart.

This example shows how middle management had the delicate task of straddling the needs of corporate and the needs of workers, and, in particular, this SPL's position was more viable if he could get workers to focus on external factors, thereby distracting resentment from his position. It shows that management was attempting to divert the focus of workers to the external environment, not management, as the cause of internal change.

6.2.2 Structural adaptation to uncertain funding

Some groups in the organisation adapted to the changing environment by adjusting their patterns of employment and diversifying the work they did to better manage their funding. Both the MCG and the E-Group had a pool of waged workers to draw on at times of the year when they needed more workers, for example, when field samples need to be collected or field trials established. In many cases these were workers who formerly would have expected to be salaried employees. In the E-

Group there was a particular need for extra help over the summer when the endophyte reaction is at its height in grasses and animals. The MBU and the MCG sent routine work such as DNA-typing out to other agencies. The W&S Group used the lab services in WRONZ and other agencies to do particular work for which they did not have the skills. These examples demonstrate how the labour structure was changed in order to keep costs down by reducing the organisation's commitment to certain workers and passing risk on to other agencies.

In order to keep their staff in work, two of the groups diversified into areas not seen as core to their science practice. One member of the W&S Group took on contracts auditing and registering farms for meat companies. This was not well paid but it did take some of the stress off the group's finances. It was not directly related to the group's work of science. Similarly, the MCG took on many commercial contracts, enabling it to have the resources to do other work it wanted to do and to keep workers employed. Some felt that this detracted from their 'real' job.

I personally feel that we're stretched so thinly that we can't do things perhaps as thoroughly as we would have and I think that for me is reflected in things like I have a lot of conference publications but not that many journal ones because I haven't been able to do the necessary repeats of the experiment and things like that ... So, I do think it's changed actually and we tend to do little bits of work, you know, a little bit of money here and there, and not the big pieces of work that we would have done before (Gaye, scientist).

Some groups reduced their need for on-farm research or found other cheaper ways of doing it. Workers in the MCG became more skilled in their collection of grass grubs. As they moved more into the area of bacterial diseases their work became more lab based. This group made use of local farms for its trials rather than AgResearch farms and collected its experimental material from farms all over New Zealand. This meant the MCG did not have to pay research farm costs, which were a considerable drain on operational finances as the W&S Group found. The E-Group intensified its research by the use of tunnel houses, reproducing the environment that enhances endophyte production, rather than being reliant on the weather and seasons. Overall there has been a movement from the field to the lab, a less risky and more controlled environment, as noted in the following limerick:

Some gene jockeys got in cahoots
With the AgResearch corporate suits
They hired lots of riff-raff
And now in the staff caf

The labcoats outnumber the boots
(Limerick to celebrate AgResearch's tenth birthday, 13-7-02)

Another adaptation has been an increasing emphasis on retraining and the learning of new skills. This became codified on the performance appraisal form,¹⁰³ as some group managers did not always take it seriously as part of their role. Many workers used this as a chance to gain some grasp of molecular biology because they believed it would be important to their future survival.

6.2.3 Patch protection and lack of collaboration

A consequence of the way the funding of science was organised was that it encouraged science groups to guard their own funding and not share it with others, as a way of protecting their own future. As the FRST bidding system developed it followed an audit trail whereby the funding received for previous research was maintained, as was its association with particular scientists. In this way anything new was identifiable. However, this system encouraged scientists to ring fence what they were doing and not allow others in as collaborators. It was very difficult for newcomers to get into established programmes. When FRST said it wanted to encourage collaboration, many groups became subcontractors to other CRIs such as Landcare Research, and in this way extended the base of AgResearch's funding rather than competing internally.

The ring fencing of research within the organisation was particularly evident. This was illustrated by the way in which one of the group leaders described the organisation and the way his group fitted into it.

It [AgResearch] works from the bottom up. Well not entirely from the bottom up - it works from the research group, the research contract ... it's basically the budgetary people up ... there's my group, there's S's group, there's L's group, there's T's group, and those are the bricks and you put them together and you've got AgResearch ... with a thick line of mortar between each group ... but the core structural bit is these bricks and you can actually take some bricks out and ... they get a bit shaky but it still holds together - and you know, that's a strength (Graham, scientist).

He saw the separation of science groups as a good survival tactic. For example, two groups refused to work with the E-Group on the relationship between endophyte and

¹⁰³ In some respects the need for the 'repositioning' exercise was an indictment on managers who had not done this in the past. However the uncertainty of the present environment is such that some managers and their staff could be excused because no-one was able to predict where new skills would be needed.

certain insects and the E-Group think they have missed a big opportunity. (Some of the components of endophyte act as a deterrent to insect attack and could have potential as biocontrols.¹⁰⁴) The leaders of these groups see every group as a separate entity, able to operate independently of any other group.

The W&S Group discovered, by a lack of response to its suggestions, that there were various areas it could not enter because they were the territory of other groups, e.g., sheep parasites (it had to make clear it was looking at external parasites in wool), sheep breeding and animal welfare. The group found there were certain aspects of wool research that were earmarked for WRONZ and it could not be seen to be in competition. The whole point of the group being situated in WRONZ was to encourage collaboration, not competition.¹⁰⁵ Some groups in the MBU worked hard to collaborate. While this was not encouraged in the past they now have successful collaborations both across Platforms in AgResearch and internationally, as demonstrated by the Inverdale gene paper with its list of thirteen authors (Galloway et al., 2000). The E-group has been rather different because it has always been made up of scientists from different groups.

6.2.4 Balancing survival and personal freedom

Scientists wishing to continue work as practising, full-time, researchers and stay in New Zealand do not have many employment options. For AgResearch scientists this is a big issue. It means they are less likely to expose themselves to risk by expressing their disagreement with organisational policy unless they feel particularly secure in their work. This security can come about through knowing that they are contributing to the profit ethos of the company, or that they are skilled enough to get a job elsewhere, probably internationally. Gareth and Walter illustrate this confidence. They are two of the most obvious “grizzlers” on the Lincoln campus but their grizzling does not put them at risk. Gareth is very secure in the funding of his group and it is producing results that would be seen to be fitting company policy. Walter mainly has contracts outside AgResearch and would fit into another CRI very easily.

¹⁰⁴ I may be doing these groups a disservice. They look for biocontrols in the form of parasites or diseases for insect pests, rather than through enhancing natural plant responses.

¹⁰⁵ Note that the restructuring of science was supposed to provide a competitive system! This is part of the built-in paradox of providing research in a competitive environment but within programmes covering different research providers.

Both of these scientists have international reputations. Other workers express more of a 'keep your head down and hope you won't be noticed' attitude to survival.

At the next level up in the organisation, the SPL level, there are real indications of tension between loyalty to the organisation and expressing views that may be seen as disloyal. Workers at this level can also feel insecure:

What happens to people in my position who get to an age where we're not transportable? I can't get another job now so I'm stuck with this. Managers have gone down like nine-pins in my career - more so than anybody else. So no, I don't feel any more bloody set up than anybody else. And so one reason why I'm determined not to move away from science is I don't want to lose my bloody [job]- well I'm interested in the science and proud of the science, but it's also my job, basically (Eric, SPL).

Another SPL does speak out within the organisation but suggests: "Keep your powder dry. In other words, save yourself for the really important battles. That's about the only tactics I've got." Jack describes his management role as a time of service to science in return for the many enjoyable years he spent as a scientist:

And I see this job as similar to a service role where I'm actually doing a job that I don't particularly enjoy because I've had a good run ... I've had 20 years of a wonderful job and I'm basically, as I've said, five years and I'm out of here (Jack, SPL).

This SPL has plans to manage his own exit from the organisation and this gives him a greater sense of freedom.

Only one respondent was not actually worried about his survival as a scientific worker. He said that as the organisation was acting like a business and as businesses acted out of self-interest, he was going to play that game too and make sure he got all the benefits and pay owing to him. This person applied the rationale of the New Right politics that has driven the changes in New Zealand's public sector to himself, and behaved accordingly.

... when I entered in 1993 things had just started changing. They've continued to change. So, as far as my dreams go, they wouldn't be idealistic dreams based around science. They'd be always based around a business model. So my dream for science as a career, now would not be based around so much making a contribution, but more around what I could get, I guess. Sad to say ... [getting] what benefits accrue to me within the organisation (Peter, technical worker).

This assertive stance and adoption of the company's 'commercial' competitive model could produce an antagonistic worker who continually assumed that the

company was not giving him his 'rights'. Further, the instrumentality inherent in such a position hardly promotes company loyalty.¹⁰⁶

I have described the different ways I have observed scientific workers adapting themselves and their work structures to the changing environment in which scientific research is practised. Now I would like to turn my attention to the ways I have observed these same workers resisting some of the changes and how these methods of resistance indicate that they are protecting parts of their self identities which are important to them. These ways of resisting tend to be covert so could also be viewed as ways of adapting or complying as they enable workers to continue working without openly challenging or causing any disruption to the overall work of the organisation. (Resistance and compliance are explored further in Chapter 8).

6.3 Identity and resistance to change

It seems as if I have always known about resistance and its link to self identity. Perhaps it comes from having experienced myself as the object of resistance as the mother of three sons who all discovered the joy of resisting parental pressure to conform at an early age! Perhaps I was aware of the link even earlier than that when I was a teenager myself in the 60s and very aware of parental expectations. Perhaps it dates from my growing awareness of feminism since the 1970s. The concept of resistance was brought home to me in an academic sense when I recently studied Foucault and his linking of resistance and power (e.g., Shumway, 1992: 139-140) throwing some light on my personal experiences.

This section describes how scientific workers in AgResearch found their identities challenged by some of the changes in AgResearch and how they developed conscious and unconscious ways to negotiate and protect themselves from these challenges. First, I paint the scene by describing particular situations in which a scientist felt challenged. Then I go on to consider how the ways in which scientific workers make their work meaningful, described in the previous chapter, can be used

¹⁰⁶ This illustrates one of the contradictions of the neo-liberal philosophy and its fear of the 'free rider'. It does not make for good relationships of trust between employer and employee, but continually provokes the suspicion that one must be trying to put something over the other.

as a protection of identity, countering the different messages received from organisational management.

6.3.1 Identity under siege

Chapter 5 described the discrepancy between the ways in which workers in AgResearch saw their identities compared with the picture promoted by organisational management. To add to this further I quote Mark's words to describe how he felt when he was seeking research funding from LandCorp:

... the LandCorp people ... want to come and see us. We have to tell them what projects we are doing and then they will see which one they want to buy into. And I was sitting there, you see, and it just occurred to me that I'm not much different from those males or females who cruise the street. I'm prostituting myself here. I'm just sitting down here, you see, waiting for my customers to come. That's just exactly how I feel. It was so real, you know? And I have to be nice to them, you know? And try to sell them my science (Mark, scientist).

In spite of this feeling, Mark was still prepared to play the game because his livelihood and his wish to do his science was such that he was prepared to put up with some indignity. Mark felt as if he had no power, whereas he could have viewed his situation in the way the E-Group does - as a matter of mutual negotiation in which both organisations are getting something they want (Hunt, 2002b). Mark knew some part of him was being challenged and he felt that if he were to comply with what the company wanted he would have to sacrifice a part of himself.

Now, for instance, every time you apply for [funding], they want a cost-benefit analysis. It's almost like saying, now tell me, if I give you \$10, how much do I get back? I find it very hard. I imagine I could be good at it, but I have to sacrifice a certain part of myself to be good at things like that. I find it very hard to do that (Mark, scientist).

Mark, in common with other scientists, demonstrated a resistance to the feeling that his science and he himself, were products for sale in the market place for profit. The next subsections explain how scientific workers were able to negotiate the maintenance of their valued ideas about themselves.

6.3.2 Commitment to something 'other' than the company

In Chapter 5 I described the strength of the feedback that workers get from their work, the importance to them of belonging to a society which used to value the work they did for agriculture and the contribution they made to science, and for some the importance of membership in the international scientific community. The younger workers, in contrast to older workers, demonstrated a commitment to 'having a life'

outside their work. They often indicated that they found their identities were based just as much on recreational activity as on work.

At one point in mid 2000, workers came back from briefings with their SPLs and the Science GMs with the message (short-lived as it turned out) that scientific publications were no longer required. This message was across all Platforms I was involved with.¹⁰⁷ Workers demonstrated considerable consternation, even those who only published annually in national conference proceedings. Ray (group leader), who first told me about it, was concerned that this would mean the work of his group would not be documented. It removed his choice of whether or not to publish. It threatened one of the ways scientific workers connect with a community outside AgResearch, particularly the link with the extended agricultural community through such events as the New Zealand Grasslands Association Conference. In their arguments, always presented as rational and unemotional, workers spoke about how important publications were for ensuring the scientific excellence of their work, how they were a guarantee of objectivity, and how it would threaten their applications for another job if they could not add to their publications. To me this directive threatened their very scientifically and/or agriculturally based identities.

All those I interviewed had a strong commitment to ‘the team’ but this was not company directed. This strong identification with ‘the team’ meant workers were more committed to the team than to AgResearch and counterbalanced the ‘One AgResearch’ rhetoric of the Strategic Plan. It is ironic that to get work done, organisations organise workers into groups which can then develop an identity of their own that in turn produces a stronger commitment to those groups than to the organisation as a whole (Parker, 1997: 126-137)¹⁰⁸. It is also ironic that for some, the commitment to the work itself (apart from the team) was so strong that organisational commitments had low priority. For example, when it came to a choice between attendance at a Team Brief or work, most staff chose work. On one occasion, even the CEO acknowledged this by saying, “You can go back to work now” at the

¹⁰⁷ Why did this message come out in the first place? I can only think that it was a way of giving workers a jolt in order to emphasise that first and foremost AgResearch was a business not a science organisation. It was later in this year that the organisation’s name was changed to AgResearch Limited from the New Zealand Pastoral Agriculture Research Institute Limited.

¹⁰⁸ Hodson (1997) challenges this perception.

conclusion of a meeting. The knowledge of the organisation, its structure and strategic plan, obtained through such meetings, is not required by workers to do their work well.

Interestingly, scientists demonstrate their loyalty/group affiliation in their choice of work clothes. They prefer to wear casual clothes, not suits as is typical of corporate managers. While a dress code for scientists existed prior to restructuring, my observation is that sensitivity to it has increased to mark the distinction from corporate management. Those with an agricultural orientation often dress in check shirts and comfortable trousers. Ray told me that he could not turn up on a farm looking as if he came from a bank or an agribusiness company! I have it on good authority¹⁰⁹ that on one campus, by wearing t-shirts and jeans scientists are indicating that they did their PhDs in an American university while those wearing shirts are indicating that their PhDs came from European universities. This contrasts with corporate members who always are seen in suits and given a generic designation by their clothing – ‘the suits’. The need to dress consistently with the norm is illustrated by the example of advice provided by one of the scientists to his SPL, who was told to dress down when he visited the Lincoln campus in a suit. Next time he came looking very uncomfortable in track pants! However, all these distinctions aside, the common claim workers were making was that their identity was in science, not business.

Another claim of identity separate from organisational rhetoric was to have a dream that existed apart from things that would benefit the company or a worker’s status in science or agriculture. Lisa (technical worker) dreamt of sailing around the world. Rae (scientist) hoped to become a writer one day and she felt she could exist on “the smell of an oily rag”. Mark (scientist) was trying to have a life that was not dominated by science.¹¹⁰ Jack (SPL) and Dave (scientist) were working out what they could do if they retired early. Such dreams cushioned them against whatever the company decided about their futures.

¹⁰⁹ Bob Skipp, pers. comm. 16-7-01.

¹¹⁰ He did not like a typical day because a typical day was just filled with science! (For him a typical day may have included nights and weekends as well.) He was trying to make an identity for himself elsewhere as this one was under threat. This could be seen as a form of resisting what is happening.

As the older generation become more disillusioned with their own work (for the reasons outlined in this thesis) they may take on more of the characteristics of the younger generation and look to spending more time on non-work activities. Or they might start planning a future outside science. Others may see themselves as trapped because there is little else they feel they can do and no other job opportunities in New Zealand.

In conclusion, this section has demonstrated that there are some other places in which workers could develop and maintain valued parts of their identities rather than through association and identification with the AgResearch values and strategy.

6.4 Resistance by distance

In this section I cover the different ways in which workers were able to distance themselves from corporate aspirations, apart from the identification with other entities described above. Collinson (1994: 25) described resistance by ‘distance’ when workers “distance themselves either physically and/or symbolically from the organization and its prevailing power structure”. The first subsection describes how physical distance may or may not work as a barrier to corporate communications. The second describes how some workers consciously seek to make themselves and corporate communication invisible by not attending corporate meetings, for example. The third subsection explains how workers can distance themselves from corporate communication by turning it into information, and the fourth and fifth detail how this enables workers to deal with the credibility of managerial and Government policy by arguing against it. The sixth subsection then explores how the endemic cynicism, supported by such arguments, helps workers further distance themselves from the organisation. Finally, I discuss how scientists by ‘playing the funding game’ protect their integrity. Such distancing tactics support workers in their maintenance of personal identities and enables their resistance against organisationally inspired values and goals.

6.4.1 The use of physical distance

Both the MBU and the W&S Group were separated by physical distance from a main AgResearch campus. The placement of such groups is obviously not a conscious choice on the part of workers to distance themselves from the organisation. Workers

could use their geographical location, however, to facilitate their avoidance of organisational activities. This distance works more as a physical barrier for the MBU. There was a lot of coming and going between members of the MBU and Invermay. At the same time, because of their placement within the University of Otago's Biochemistry Department, there were strong relationships with that campus. John, as SPL, worked hard at keeping the group open to intellectual ideas both through his Journal Club, which maintained relationships with Invermay staff as well as keeping workers up to date with the current knowledge in Molecular Biology, and through attendance and contributions to departmental seminars within the university. So the placement of the MBU within the university has allowed it to be more open to other influences apart from AgResearch, and these are science-based influences.

The W&S Group were in a different situation. Though on the WRONZ campus at Lincoln, and able to mix with WRONZ staff at tea breaks,¹¹¹ they were made very conscious of their separation from WRONZ. They were not allowed to move freely on the WRONZ campus, and were excluded from campus communications. They worked hard to keep their AgResearch links by attending organisational meetings in full strength, compared with the low attendance by others actually on that campus.

Corporate management also demonstrated an awareness of the way in which physical distance could separate workers from the organisation. AgResearch was seeking to address this by going through a centralising phase. 'Outstations' such as the Templeton farm have been closed down, and work that goes on, for example, at Winchmore and Tara Hills, was being reduced and staff moved to the major campuses. This meant that workers had more contact with 'the organisation'. Fieldwork was reducing as field workers were brought more and more indoors. This was demonstrated in all groups. On all the main campuses, security doors have been installed to protect AgResearch property and commercial secrets.¹¹² These doors also restricted workers' easy access to 'the outside' – mainly to those in other organisations on the same campus. (See Section 6.5.2 later.) There was also an

¹¹¹ The members of the W&S Group did not always sit with each other, indicating their interest in and inclusiveness of others outside their group.

¹¹² Another CRI on the same campus had some of its potato research trials damaged in 2000 by Greens objecting to genetic modification. This also caused an increased concern for security.

emphasis on video conferences rather than travelling as a way of reducing travel costs. As was his right, the SPL of the W&S Group expressed concern about car usage and rent paid to WRONZ. All these actions carried out in the name of organisational efficiency, restricted the independent movement and networks of workers and isolated them from ‘outside’ influences. Perhaps it was not just the decline in agriculture as a source of public funding and commercialisation that was causing these things to happen. These observations indicate that organisational management wished to have more power over workers’ lives, challenging the autonomy of both individuals and groups. Workers were aware of this as the following limerick aptly illustrates.

The AgResearch corporate dudes
 Got in one of their dangerous moods
 They said, “We must keep
 Our staff herded like sheep.”
 Now we all have ID tags like ewes
 (Limerick contest to celebrate AgResearch’s tenth birthday, 17-7-02.)

6.4.2 Distance by ‘non-attendance’

There was a common saying in AgResearch that went something like, “If I keep my head down in a few years time I’ll still be here but corporate and its vision will have changed.”¹¹³ This ‘keeping your head down’ philosophy was a good reason for not speaking at, or not attending, campus meetings. It was a way of being invisible.

Non-attendance at organisational meetings could also involve staying away, not to make yourself invisible, but as a means of protecting you from ‘hearing’ what the organisation wanted to communicate. For example, there was a strong resistance in some groups to attending the ‘Invitation to Innovation’ courses described in my introduction. Some group leaders and SPLs supported this lack of attendance. Such attitudes did not encourage those who worked in their Platforms to go to courses, and in fact protected them from the influence such courses might have had.¹¹⁴

¹¹³ Murray (2000: 47) has a similar quote: “Lets (*sic*) just hang in there guys, the managers have a really short shelf life, they will move on and we will still be there, so just let the management team go away and do what they want and we will continue to run the organisation the way we want it to be run.”

¹¹⁴ For those on the campus who went to these courses, the second part stirred up such an awareness of how a lack of feedback was part of the culture, that they formed a group for their Action Learning Experience (groups formed to practice techniques taught at the courses) on how to give feedback. This group then presented feedback to the campus leader about his handling of one of the ‘moving people’s offices’ exercises. Needless to say nothing came of it – either the presentation exercise or the attempt by the group to change the culture.

There was a lack of attendance of certain groups at any courses conducted by or set up by the National Training Officer. These courses were about communication and managerial skills, indicating the increasing interest, particularly on the part of Human Resources, in the so-called 'soft skills' of employees. Technical workers, in contrast, were interested only in courses that increased their work skills, not their social and communicative skills.

'Non-attendance' can take the form of 'not noticing'. When AgResearch workers logging on to their computers each morning were presented with the mission, vision and brand value statements on a scenic farming backdrop, workers concentrated on criticising the backdrop! They thought it was not a good example of a farm – it was a bit rundown - the fencing was not in good shape and there were weeds in evidence. And where was it anyway? In this way they avoided the words on the screen.

Lower managers could counter workers' non-attendance at meetings by passing on information to them. However, this may act to protect workers. The third party may have added their own 'colour' to the communication or may choose not to pass it on at all. In the year 2000 I was looking for a copy of the AgResearch Annual Report usually received by every member of staff. Eventually I found a large pile in the storeroom. Someone had decided not to distribute them or even to announce their availability. On other campuses, the system of corporate communication worked slightly differently. Only group leaders attended Team Briefs and they were expected to communicate back to their workers. Though all workers received the Team Brief on the email, many did not know what I was talking about when I asked about it. This rather haphazard system was dependent on the group leaders' communication and as the groups did not have regular meetings, most communication was conveyed over tea breaks, not in a systematic way. Some of the groups on the Lincoln campus could be seen to operate in the same fashion. This system of dependence on a third party, protected and distanced many workers from corporate messages.

The W&S Group did not have this protection. Through their attendance at all organisational meetings and the thorough job of communication done by their group leader, they were fully aware of what was going on in the organisation. They were the most confused about what they should be doing and how they fitted!

I also observed this among individuals not strongly associated with a team, who attended organisational meetings. These were the workers most at risk of losing their jobs or those who did lose their jobs. They could be seen as those who were trying the hardest to identify what the organisation wanted and to adapt to it.

These examples indicate that organisational communication impacts less on workers if it is received through a third party, or if workers do not attend meetings, thus placing some distance between the communication and the recipient. This distancing can be viewed as resistance if it is intentional behaviour by a worker, or if a lower manager initiates it in order to protect his or her workers.

6.4.3 Distance by turning organisational communication into information

Other methods of distancing oneself from the organisation are related to the ways that workers deal with organisational communication when they do 'hear' it. Information is highly regarded in science, and is seen as objective and devoid of emotion. Interpreting communication as information is a way of desensitising it of its emotional content. Organisational management colludes with this way of presenting the organisation. The Team Brief, for example, was produced as an emailed document of two or three pages. It was compressed into two columns, the left hand one stating a subject and the right hand one giving a fuller explanation. This document was the focus of the Team Brief campus meetings when it was presented as overhead transparencies printed from the original. It meant that it was impossible for the audience to read, yet the corporate manager would make their way through it as if it could indeed be read. The abundance of natural lighting in the meeting room did not enhance this readability either. For at least eighteen months the Team Brief was presented in this form. One of the major presenters on the Lincoln campus was the Marketing Manager! The only time I observed a different and better performance was at the Grasslands campus. The version presented by one of the Science GMs, who had not been present at the meetings about which he was passing on information, was broken down into major headings with only so many per overhead, and presented in colour.

One of the members of the E-Group commented on corporate presentations:

... if I stood up in front and presented like that at a conference I'd feel disgusted with myself at the end – as if I was letting the organisation down. These people are interacting with our clients, not necessarily just us - we can forgive them – but they should be really switched on. They shouldn't stand right in front of overheads or whatever, and they should make sure that everybody could see them. They should stand up when they're talking – the basic things about presenting. You know they should be doing that automatically ... and I get very disappointed when I see them ... do a presentation like that (Martin, scientist).

Martin has illustrated how, to him, corporate presentations do not even deliver information well. The other notable example of the corporate tendency to see communication as presenting 'information' only was the strategic plan presentation. It was the usual science conference type with the CEO standing to the side of a Power Point display while the audience and the presenter were in darkness. I call it the 'primacy of information over people' approach. What is on the screen is deemed to be more important and have more impact than the person presenting the information. The CEO did not help dispel this impression - many people described how his presentations made them go to sleep (indicating that they wanted more than factual information).¹¹⁵ This had something to do with his monotonous delivery, his voice having little variation or passion. He gave no evidence of any emotional involvement with or commitment to his topic.

This way of presenting and receiving communication lessens its emotional impact and its chance of achieving a change in attitudes. Even though organisational management said it wanted workers to get on board with the new direction, it was not good at communicating this in a way that would have made a difference, even though it had the skilled personnel to do it.¹¹⁶ Communication presented in this fashion actually facilitated workers resistance to it by its implication that it was 'only' information, did not have to be engaged with, and was not imperative.

¹¹⁵ I found this reaction of staff surprising as I had always found his presentations interesting because they were packed full of information and gave some insights into the way he was thinking. For example, he was persuading the audience to see things a certain way such as becoming more aware of the international context in which he saw AgResearch operating. He was doing this long before it was apparent in any other way within the organisation.

¹¹⁶ This raises some interesting questions which I am unable to answer. Is this conscious or unconscious? Is it an indication that staff are not the real audience? Is management just saying the right things to align itself with Government and FRST priorities?

6.4.4 Distancing by challenging managerial credibility

If organisational communication is received as ‘information’ then workers can manipulate, challenge, accept or reject it, just as they treat any information received in their science practice. Some organisational communication was simply not believed. For example, when the CEO stated AgResearch’s future revenue goals workers felt they were just not possible. When it was stated that it now had over 40% (in year 2000) non-FRST funding, some workers just laughed because they knew that a considerable amount of what was called ‘commercial’ funding was in fact FRST funded subcontracts with other CRIs. When the Strategic Plans (1997-1999) stated that AgResearch wanted to be the ‘employer of choice’, workers felt they had little ‘choice’ to work anywhere else. They laughed too, particularly those in the Endophyte group, when AgResearch was called an international organisation because they knew that at the time AgResearch had one man in Australia with the Cultivar Development and Marketing Unit (CDMU) and another half-time in the United States. They did not think this made AgResearch an international company.¹¹⁷

Wade (scientist) summed up the perceptions scientific workers had of managers:

Wade: I think it was a shock to learn that the people above me are no smarter than you are and often are dumber ... I had something of a rosy eyed view that the people who are leading an organisation actually knew what was going on and it was very, very disappointing to find out that they didn't ... I think I'm a pragmatist and I don't expect people to be umm, more than perfect and so it didn't so much shock me as just surprise me, I suppose.

Interviewer: So how did you make sense of that? How did you learn to live with it?

Wade: ... half the time you know what is going on as much as the people above do or even more sometimes. It just changes the way that you view the information coming back. I don't assume that the direction that's coming from corporate is the right one because I know that the processes that are used to make these decisions are pretty flawed. They're not scientifically sound. I know that personalities matter more than what people know. It just changes the way that you view the organisation.

Wade and others talked of the ‘stupidity’ and ‘silliness’ of some managerial decisions. Such attitudes could be considered intellectual arrogance, but these are people who have had their intelligence confirmed by society through its educational institutions. As Martin (scientist) said: “The problem is that you're

¹¹⁷ By 2001 this had changed with AgResearch purchases into companies like SASTEK in Australia.

dealing with very intelligent people, not just little plebs. And they don't like being treated like plebs.”¹¹⁸

There was plenty of evidence of situations where things said by corporate managers never happened. When the CEO started in 1997 he said that he did not want to be a power and control manager. Dave (scientist) commented:

This move towards a [strategic] plan driven approach is certainly - given what Keith Steele [CEO] was saying a few months before that - something of a shock. Again it's something that has crept in rather than ahh, been in place. Because Keith was saying, yeah, we're going to consult staff more and more, and all that sort of thing, so yeah, it has been a bit of a shock (Dave, scientist).

At a Grasslands campus meeting I attended in October 1999, one of the then Science GMs, John Hay, said the incoming Board Chairperson, Brent Layton, wanted to have internal debate about genetic engineering (GE) and about the possible AgResearch name change. As far as GE was concerned, the Board chairperson felt that there would be many different points of view in AgResearch and he did not want AgResearch adopting a stance that, for example, would embarrass staff when they were talking with their neighbours. The communications manager had been instructed to set up debate on both these issues. What ensued was one presentation throughout AgResearch, which attempted to educate workers about GE rather than debate points of view. The branding/name debate never happened. On another occasion the Board chairperson was invited to Lincoln by one of the scientist managers to talk about AgResearch's new way of reporting on its overall financial position, EVA (Economic Value Added). Later the CEO told this manager that his behaviour in making this invitation was inappropriate. All communication with the Board Chairperson was supposed to go through the CEO.¹¹⁹

¹¹⁸ Becker (1971: 126-127) has given the name 'hierarchy of credibility' to the common understanding that as all information goes up the people at the top of an organisation should know the most. Here it is presented as a belief that scientific workers have become disillusioned with, even though AgResearch bucked the common practice during the restructuring of the public sector, by continuing to employ a scientist as its CEO rather than a generic manager. "A central notion of the New Zealand reforms of the 1980s and early 1990s was that an able manager was capable of managing any agency in the private or public sector" (Easton, 1995: 39).

¹¹⁹ However, the Board Chairperson could have refused on these grounds and did not do so. This lack of contact between Boards and employees is standard practice for governance bodies, which makes it difficult for Boards to get any feel for the grass roots of the organisations they have responsibility for.

These examples explain why the behaviour of corporate management did not contribute to workers' trust in the corporate management of the organisation and made it appear to workers that their cynicism was justified. Scientific workers are capable of making thoughtful and rational analyses and if something is found wanting, or they are not given a chance to provide input into organisational policy, that provides sufficient reason for them to generalise and presume all organisational utterances should not be taken seriously. In this way they were able to use this distancing tactic in an attempt to resist much of the impact of corporate statements.

6.4.5 Distancing by challenging the credibility of Government policy

In the same way, scientific workers were able to challenge the credibility of Government policy as well as organisational policy. When Petra (technical worker) said, "When I want a laugh I look up the *CRI Act*" she was indicating her perception that how things have turned out in the science restructuring do not match the Government's initial intention. Some scientific workers hoped that the incoming Labour Government in 1999 would return to certain ideas in the *CRI Act* such as "the purpose of every Crown Research Institute is to undertake research" (Principle 4) and "the research undertaken by a Crown Research Institute should be undertaken for the benefit of New Zealand" (Principle 5). (However, it should be noted that the Act also states in Principle 5 that a CRI should be "operating as a successful going concern", and should provide an "adequate rate of return on shareholders' funds".)

Many scientists in AgResearch could not understand the Government's desire to reduce the importance of agriculture in the national economy. They argued that if New Zealand increased its agricultural exports by one percent this would be far more than any new product could earn in export earnings. Agriculture is where New Zealand's expertise lies and it already has a head start on other countries. To these workers it would make sense to maintain that expertise and competitiveness rather than run it down. Others disagreed with the emphasis on genetic modification research, and this was not necessarily disagreement from a 'Green' perspective:

... I'd have to tell you I'm not that enthusiastic about genetically modified organisms. I think it's just an approach – it's not to save the world. It's not going to feed the world. It's just going to push commodity prices lower. Umm, yeah, so I don't think it's the answer. I actually think it's an old technology now, because it sort of started before I even went to university and it's not given

the rewards that it was supposed to and, at this point in time, consumers don't want it and that may prevail (Colin, scientist).

By arguing against Government policy as not following common sense, workers were able to resist by continuing to follow their own beliefs about what would benefit New Zealand.

6.4.6 Distance by cynicism

Cynicism grew among scientific workers as organisational communication did not live up to its promises, a likely evolution from workers treating organisational communication as information and then proceeding to argue about it. The practice of cynicism was endemic. It was a way of placing a distance between oneself and the object of resistance – in this case corporate rhetoric. For some groups cynicism was a valued part of their identity.

I think this campus [Lincoln] is regarded as quite good but cynical by our corporate type people. We are reasonably courteous but cynical. But probably reasonably competent. Now if you were competent, cynical and courteous you'd probably get by on this campus (Euan, scientist).

However, it was interesting to discover that the Grasslands campus also felt that it had a cynical image and they were rather proud of that. "This campus [Grasslands] has always had a degree of independence and stropiness inside AgResearch. We were the DSIR people. We were always seen as being more cynical. We were not seen as having quite the right culture" (Owen, scientist). My contention is that though cynicism may have always been part of scientific culture in DSIR it has now become something to be proud of in certain groups, and has become endemic throughout the organisation. Other workers, however, told me that they had become cynical and did not see that as a good trait.

Cynicism is a great way of finding some solidarity with other workers. It is the glue that can hold a group of people together. It enables them to resist in their minds what is being done to them, and so it fulfils an important function and does not need any action. It provides workers with an alternative. It becomes part of their identity to see themselves as cynical and challenging. Cynicism is also a way of self-protection from getting emotionally involved and excited about something that may not happen.

6.4.7 Distance by passivity

Passivity can be another distancing mechanism. Scientists who remain with the organisation and do not seek promotion to management status, could be seen as offering passive resistance, particularly to the idea that success is denoted by such promotion. Graham, Noel and Jerry are examples of this. They have decided not to progress further up the management ladder because that would mean doing less science. Such decisions can denote that the rewards which workers are still receiving outweigh the negatives. Some workers can have the idea that corporate managers come and go but “I’m the ‘really’ loyal staff member. By surviving, by hanging in, I demonstrate that”. The ‘hanging in there till you kick me out’ frame of mind demonstrates the same attitude. The organisation has to make the effort or take the action, not the worker. These forms of conscious passivity are resistance.

Passivity is an aspect of cynicism. Cynicism enables people to be passive about their situation. It saves them from acting. The problem with this myth of passivity is that those who have survived have forgotten how many have not. Furthermore, it places the responsibility for the “vision” with corporate and not with themselves.

6.4.8 Playing the game

When scientists come to see communication as information, they can treat it just like scientific information and are able to distance themselves from it sufficiently to play the games required to continue to do their work. The most common example in AgResearch was the way in which scientists writing funding proposals played the game of aligning their work to Government and organisational policy in order to obtain public funding (Hunt, 2002b). By seeing themselves as ‘playing the game’, scientific workers attempted to distance themselves from any challenges this might have for their integrity. After all, if you are playing a game you abide by the rules of that game while within it, and this is not supposed to have consequences outside it. There is pride in playing the game well. There can be a lack of emotional commitment to the organisation, while still having a commitment to ‘the game’. One scientist said to me that he would hate to be the writer of a funding proposal - trying to “second guess” what FRST wanted all the time. He (Merv, a scientist not in a case study group) said that with programmes becoming so large it was fairly easy to keep them vague. This meant scientists could be more adaptable and flexible in

what they did, satisfying FRST's changing directives. It can be seen as helpful for the organisation if science groups do 'play the game' and use the "weasel words" (Colin, scientist) required in order to present their funding applications in the way that they think would be most attractive to FRST.

Most of those who play the game do not like themselves for doing so and find it very stressful. Part of the desire of the E-Group to get commercial funding is because it may remove them from this sort of game. Ironically, in a sense this also satisfies organisational goals though the reasons for doing it do not. The organisation itself mimics this response in its establishment of Celentis as a means of making it independent of the fluctuations in Government policy.

This 'playing the game' attitude is also present in the responses to the performance appraisal process. I asked one scientist about how the latest round had gone (late 2001) and his response was completely light and amused. He felt it was not a problem for ninety five percent of workers to align their work objectives to the company strategy and values, and the five percent who did not do so just did not have the imagination. He seemed to have no awareness that the company wanted some personal commitment to these goals. (See Appendix E.) It was also worth noting that this scientist related Section B (on personal attitudes) to the science objectives of Section A rather than seeing them as separate and a demonstration of commitment to AgResearch values.

While scientists may have had to play games in the organisations of the past, DSIR and MAF Tech, the games now require different things of them. They have to try to guess what FRST wants, they have to use a language they may not believe in, they feel they have to make claims that they may not be able to fulfil, and most of all, if they do not get it right they will probably lose their jobs.

This section has described how workers in AgResearch practice many different tactics to distance themselves from the organisational messages which challenge them to change their beliefs about themselves and their work. By practicing these tactics they hoped to resist these challenges and to continue practicing their science to receive rewards that continue to be meaningful to them while preserving their

integrity. The links between these emerging themes of distancing, resistance and identity will be backed up by the sociology of work literature reviewed in Part C. The next section considers more overt forms of resistance than those already described.

6.5 Resistance to structural features of the work system

In this section I consider how workers tried to resist some of the structural features of organisational and Government (via FRST) control such as timesheets, security arrangements and the length of a research programme. The section closes by considering types of managerial control that some workers find acceptable.

6.5.1 Resistance to timesheets

Within AgResearch, action on timesheets was one of the few obvious signs of resistance. The use of timesheets arose through a FRST expectation. FRST wanted some accountability for the way funding was spent over programmes (see Section 5.5.2). An indication of resistance to this system was that some workers never filled in a timesheet (and nothing seemed to happen to them). The other way workers resisted timesheets was by using a facility of the spreadsheet programme to insert a ‘typical’ day averaged over their science programmes whether it was an accurate record of that day or not. This was an example of the degree of collusion the organisation entered into in which the accountability culture deemed that it was more important to complete ‘the books’ than for the record to be accurate. Because of this lack of accurate record keeping, science managers in the organisation never learned how long certain work actually took, knowledge which would have helped them plan future work or complete budgets realistically. It could also have provided them with a way of working out if some piece of equipment or a changed process had made a difference to the time needed for some activity.

The basic reason for the resistance to timesheets was “philosophical”, according to Bill (scientist). He had a belief that scientific workers, as professionals, should not need to justify the way they spent their time. They should be trusted. He also pointed out that he did not stop thinking about work just because he was not sitting in his office and the time was not between 8.30am and 4.30pm, Monday to Friday.

But sometimes a lot of these things are a genuine eureka type thing that come out of nowhere ... I was walking in the local hills yesterday and umm, just had an idea. I was sort of composing a paper in my head because you know your mind is free to wander while you walk, and this was a synthesis kind of thing - just a little idea that brought together a few disparate kind of ideas. I was sort of excited enough to try and write down the thoughts when I got home. So yeah, basically ... you're doing science all the time (Bill, scientist).¹²⁰

He had taken his concern about timesheets to senior management and a committee of three, of which he was made a member, was formed to consider it. But he was outnumbered. One member did not really care about timesheets and the other was very supportive of them.¹²¹

The irony (or an unintended consequence) of timesheets is that they encourage workers to work to time, to keep track of their time so that they do not spend more time at work than they are paid for. It places an emphasis on time rather than getting the job done, the latter being the expectation of a professional attitude with a salary being paid for 'doing the job' rather than spending a certain amount of time at work.

6.5.2 Resistance to security restrictions

Another element of control which an organisation can exercise over its workers relates to restrictions on access to workers in other organisations or on other campuses. There was quite a furore early in 2001 on the Lincoln campus when AgResearch worked with Crop and Food Research (the landlords of the campus as a whole) to have security doors installed throughout the buildings, and security gates at the entrance (referred to earlier in Section 6.4.1). Some workers within AgResearch gathered together with Crop and Food workers to state how much they disliked the idea and how it would restrict their access to each other. The event even made the local newspaper, *The Press*, with the source remaining anonymous. Government policy, as expressed through FRST, has indicated CRIs are to do more collaborating. One scientist said this decision about security obviously went against that and indicated to him that AgResearch management was saying it did not care so much now what FRST thought because it was going to be less dependent on FRST funding in the future. This security issue was something that science workers became really

¹²⁰ Note that this highlights the contrast between organisational and scientific 'loyalty'. Scientists spend time thinking about their science not the organisation.

¹²¹ Another way of an organisation making sure nothing happens is to form a well balanced committee!

disturbed about, and it is interesting in the light of their general passivity and tendency to complain but not to act, that they did do something about it. However, nothing changed. The security system was still installed.

Another side to this concern about the restriction of interaction between workers in the two CRIs, was that I had not observed much interaction between the two at the scientist level. There was interaction at the technical worker level because some equipment was shared (and I gather this was able to continue). The security doors were a barrier to the relationship between scientific peers. It was seen as a symbolic action by corporate management to confine workers to the organisation over and above their science relationships. (There was, however, nothing to stop people ringing or emailing to make arrangements to let each other through the doors.)

In contrast to this response there had been little concern expressed about changes to the telephone system in the previous year. Formerly all calls had gone through the same reception and within the campus there was internal dialling. All staff had access to a combined phone listing of all organisations on the campus. In the new system all calls to AgResearch had to pass through a different system to the other CRIs on the Lincoln campus. Outside callers looking for someone in AgResearch had to phone an 0800 number based at Ruakura. The way to phone the other CRIs and other organisations on campus was never made clear and certainly made such access more difficult. There was not the same outrage about that, perhaps because it did not have the same visual, and hence symbolic, impact as security doors.

6.5.3 Resistance by stretching the time-span of research

FRST exercised control over how long a research programme was to last but as the AgResearch Board Chairperson said, FRST's audit trail system actually encouraged scientists to never finish their research. When something is 'solved' what does a science group do next? It pays not to solve a problem. Ray (scientist, not in case study group) indicated to me that he certainly would not be in any hurry to solve the latest pastoral issue he had received funding for. The leader of the Argentine Stem Weevil (ASW) Group was fortunate that just as he was told by FRST that it had done as much as was sensible in its development of a biological control for ASW, the clover root weevil problem came to its attention. Other groups were critical about

how long the MCG has been able to spin out grass grub research but it has now had pressure put on it and is expanding into biosecurity and biocontrol work on some overseas insect pests.

With scientists' job security vested in the subject of their research, it was understandable they would act to maintain a research programme. It was too risky to branch out and lose their funding. Over my time as bid-coordinator I noticed that any new ideas were unlikely to be successful in the FRST bidding system of the past, as was indicated by the lack of acceptance of new AgResearch proposals. It was very difficult to get a new area of research up and running while another was winding down. New work could only be carried out within the audit trail of older research. (If Government policy requiring innovation were to be implemented, there needs to be some system to ensure scientists have employment as scientists rather than for a particular programme, if they are to be encouraged to take risks.)

6.5.4 Management that is not resisted

As I have mentioned before, not all change is resisted and not all management is resisted. So what is an acceptable way to introduce change and what management intervention is regarded as satisfactory? Managers play an important role in introducing change. For example, Gaye (scientist) has encouraged Eve (technical worker) to move to new areas of work and do further training. This has been well received by Eve because it has made her work more interesting and less routine. But also the encouragement has to do with 'work' rather than with changing her attitudes to why she is doing the work. The threat comes from the corporate-type manager who wants workers to 'be different' from who they are. At the same time it must be noted that the norms of the science group manager and those who work for her/him are probably the same, so there is no need for workers to be threatened by change from *these* managers. Workers already 'think and feel the right way'! Walter (scientist) told me about another means of control that he does not resist:

Interviewer: Who makes sure you do your job?

Walter: I don't think anybody. I think I'm trusted to do it. If I don't and there is ... umm, the way it comes through to me is not in a formal way at all. It's just semi-joking comments both from Eric and from Greg. And I mean, even though it's semi-joking, they don't pull punches, you know those guys. (Laughs) And I'm sensitive enough to pick that up and it's there now, it's with me and it's up to me to respond and if I don't it will just be a sort of steady erosion, I guess, of trust and loyalty. And those are things I value quite highly so I'm not about to

let that happen ... and it's certainly the case that one motivation for doing it is actually to make other people happy!

I suggest that these two examples, involving Eve and Walter, illustrate the difference between corporate management and science group management. The main reason for scientific workers' unhappiness does not come from science group managers. The latter manage the everyday work of science and may suggest change or further training in relation to that which is quite acceptable to workers.

This section has described how scientific workers have been able to resist in some way or other some of the managerially imposed structural components of their workplace environment. This resistance has rendered timesheets useless except as formally satisfying accountability requirements. Resistance to restrictions on access to other organisations on the same campus have not resulted in the restrictions being lifted. Similarly, efforts to lengthen out the time span of research may work for a while but eventually new areas of work need to be found if workers are to survive in employment. Finally, I considered briefly how some ways of managing are acceptable to workers. This leads into the next section which examines some of the conflicts between managing a scientific, compared with a business, enterprise.

6.6 Science versus business

This section will enlarge the emerging areas of interest further by identifying and discussing the many ways in which the intent of AgResearch management to turn AgResearch into a science business has challenged scientific workers. First I describe further how scientific workers are asserting the primacy of the practice of science in their everyday working lives. Secondly, I consider how the cultures of business and science do not fit together well, judging by the responses of scientific workers. This subsection is followed by others considering more specific challenges business makes to a science culture – the concentration on endpoint rather than process, the conflict between selling a product and being objective, the concern for scientific excellence, the demand for commercial secrecy, and finally, the way middle management becomes trapped between the two cultures.

6.6.1 The primacy of science

I'm not sure you can make a distinction between "agricultural science" and "science" in AgResearch ... all my colleagues, whatever their background and

current affiliation, owe strong allegiance to “science” and are champing at the bit to be able to do more of it (Rob, scientist).

Why were scientific workers adapting to and at the same time resisting the changes they saw impacting on them and their work? I suggest that it was because they wanted to continue to work in an organisation that enabled them to ‘do science’. This is clear, both because they say that, and, because when the choices and actions they take are reflected on, such choices and actions support their scientific practice, or assert their identities first and foremost as scientific workers. It is through science they were able to achieve and make their contributions, whether they were to agriculture, science, and/or the environmental sustainability. It is through science that they were able to obtain the day-to-day rewards and feedback from doing such work. They chose to spend their time doing the work of science practice rather than going to organisational meetings, such as (non)attendance contrasting with the full attendance at Science Platform meetings (held annually in some location away from a campus) and science group meetings, as these were about planning actual work.

Tim, one of AgResearch’s business managers, pointed out that scientists were focused on science and he was focused on clients, so if a scientist had to make a choice between getting something done on time for a client or going to a conference, the scientist would go to the conference. Tim felt that this was wrong, but I see it as each having their different priorities. Scientific workers indicate by their use of time where their priorities lie whenever they have to make a choice between something that is a company priority and something that is a work/science priority.

The very ‘doing of science’ entails continuing associations with past practices and individualised purposes. Scientific workers I interviewed were very aware that they were building on knowledge from the past. In molecular biology in particular, there was a high consciousness of this because within their own employment history, scientific workers had learned the importance of prior work when they had found it to be faulty. The W&S Group was building up a database of several thousand publications of work done on fibres and skin. One scientist was going back over previous work and finding that some long-term assumptions in wool research were incorrect. Scientists felt that any products they were involved with had a history. The

E-Group and the MCG were very aware of the stories associated with their main research issues – endophyte and grass grub. Endophyte research started in the late 1980s. The control of grass grub has been an ongoing concern for New Zealand agriculture since the 1920s when the first parasites were imported as a means of biological control (Hunt, 1998). All workers were conscious and proud of their MAF and DSIR histories. Even those who had started work in the time of AgResearch were aware that when asked by outsiders who they worked for, they had to describe AgResearch as replacing MAF Tech and DSIR, because these organisations were familiar to most New Zealanders. All these examples illustrate the importance of a historical perspective in science practice.

There is a feeling among scientific workers that this past is not acknowledged by senior management. The associations of MAF with agriculture and of the DSIR with scientific excellence are no longer recognised yet these things are important to the identities of most of the workers in AgResearch. Scientists did not see new products as being produced ‘out of the blue’. Government policy inferred this when it said (via FRST and the New Enterprises Research Fund (NERF)) that it wanted to sponsor research for ‘new’ industries that had not yet been thought of, as if they would have no history. By restructuring into Platforms, AgResearch carefully positioned itself to obtain funding from the NERF fund its first round and hardly received any (Team Brief, 8-3-00). Only fifteen percent of this funding went to CRIs. The signals were quite clear that agriculture did not fit into the ‘new industry’ definition. It was an existing industry that was not seen as having the potential to produce anything ‘new’.¹²² My notes on the Pre-Strategic plan talk (7-3-00) indicate the reaction of the Board Chairperson. He said, “It’s a lesson to make ourselves independent of all that nonsense”. This comment illustrates the Board’s concern for AgResearch to gain more commercial funding – to become a business.

According to Government and organisational policy, this business was to be based on innovation. Innovation and discovery on a larger scale in AgResearch arose through

¹²² AgResearch scientists thought by manipulating the words they would receive funding as they had in the past. For example, in the early 1990s when FRST said that it wanted to fund research that ‘added value’ and implied this could only be done beyond the farm gate, AgResearch was able to get funding for adding value ‘on the farm’.

trying to solve agricultural problems. This was the motivation. The ability to persist and pursue thinking that was outside the norm or the beliefs of the time, required particular individuals who were prepared to be different and to be isolated. Henry's religious beliefs had given him the feeling that there was something special waiting for him. He was able to stand against the thinking of the time about ryegrass staggers. He had the commitment and support to pursue what he thought outside working hours. Garth's conceptual idea about disease as being part of the life tables of insects went against the views of the entomologists at the time. His commitment to the environment tied this in with methods of biocontrol rather than chemical usage. Craig's 'ethical sheep' idea grew out of his commitment to sheep farmers and his vision of what could be a concern in the future. Hunter is so committed to his work and the company through his manager Greg, that he is unaware of company politics. He is relishing solving a problem that other larger and more renowned organisations have been unable to answer. His job description is very specific and his racial origins and attitudes separate him. Rosie had a commitment to collaboration and in spite of an organisational climate that disapproved of it, she was able to gain valuable skills and input from others. This enabled them together to make a notable discovery. Ted has such different ideas that it is difficult for him to find an audience for them in the organisation at all. He is generally regarded as eccentric.

At the 'ground level' much of the innovation that was described to me arose from a desire to do a job more efficiently so that time could be freed up for more interesting aspects of the work. Technology and new techniques were also seen in this light, indicating how these could be stimuli for change. Another driver of innovation was the challenge to solve problems occurring in the use of lab techniques and protocols, particularly in molecular biology. Innovation can be a two-edged sword, as Todd (technical worker) discovered. As he became more and more efficient in managing and scoring his different experiments by inventing measuring equipment, he found he was given more and more work! At the same time there was no mechanism within the organisation to encourage others to use his techniques and so increase the

efficiency of their work as well.¹²³ Innovation at this level of science practice was developed and instituted by those who benefited from it.

I did not see any examples of innovation and creativity that arose out of an organisational commitment. Some of the major discoveries I became aware of were made at the time workers were employed by MAF or DSIR and have taken a long time to come to fruition as a product. This is important because if an organisation wants to focus on innovation it has to be aware that motivations for innovation may not be obvious, and may come out of difference, and the strength of belief in something other than the company.

Scientific workers demonstrate great persistence and creativity in trying to overcome problems in their everyday scientific working lives. But when they are feeling unhappy about other aspects of their working lives they give evidence of dealing with these problems in passive ways, indicating their feelings of powerlessness. A risk could be that this attitude of passivity moves over into their science practice. They might just come to work and ‘do their job’ rather than have any enthusiasm about it, or energy for solving the many practical problems that are a daily challenge.

In wishing to impose some uniformity of beliefs and attitudes, the organisation runs the risk that its achievement of innovation may be hampered. Innovation appears to come out of the freedom of people to think differently and from their exposure to difference.¹²⁴ The corollary is that people who are already different by nature of belief or culture, are frequently a source of creative and innovative ideas. Often they are prepared to pursue these against the negative responses of others.¹²⁵

¹²³ Turpin and Deville (1995: 14) note: “... it is the choice between the scientific manager and the scientific entrepreneur that is probably more critical [than the career pathway between research and management]”.

¹²⁴ Winsley, Gilbertson and Couchman (2001) in their case studies of innovation in New Zealand companies emphasise the importance of interactions within a company, and externally both nationally and internationally (pp. 170-172).

¹²⁵ Jessop mentioned in his lecture *Globalisation and the State* (21 September 2001, University of Canterbury) that some nations welcome immigrants because they are seen as a source of difference and hence a stimulus for new ideas.

6.6.2 A clash of cultures: science as business¹²⁶

There were many aspects of AgResearch as business which did not fit workers' views of their organisation. When the logo was changed in 2000 it met with almost universal derision from science workers. It changed from a seraph font **AgResearch** outlined in white or gold, on a dark green background, to a non-serif font **Agresearch** in white, set at the bottom of a lime green square.¹²⁷ Scientific workers regarded it as pale and insignificant without the strength and class they associated with the old logo. It was a symbol of the corporate world and the market place, which they did not identify with. Their feelings were identified in this limerick which also expresses dismay at how corporate managers can move on to another job without being accountable for the changes they have made.

There was a young lass called [name]
Whose graphic design was quite strange
She made a green blob
That made the staff sob
Then buggered off for a job change
(Limerick written to celebrate the tenth anniversary of AgResearch, 17-7-02.)

When AgResearch's corporate clients were invited to the launch of its subsidiary product development company, Celentis, in Wellington, the lack of client knowledge demonstrated by the communications manager, the organiser of the event, embarrassed some of the scientists attending:

At the corporate launch of Celentis they brought some little twit from a radio station to MC the whole thing. There would be a dozen people I could think of in AgResearch who are fantastic orators and really witty speakers, so why do you have to bring in a radio personality? Hah. So that disappoints me and I feel that decision makers could do well to acquaint themselves with the range of talent, capability and attitudes in AgResearch and celebrate it (Eric, SPL).

The razzmatazz of a commercial company brand launching seemed out of place for the standard AgResearch clients. The way Celentis was launched did not represent the identity that scientific workers within AgResearch perceived the organisation to have.¹²⁸ The use of a radio announcer as front man did not indicate a consideration, knowledge and valuing of the many AgResearch workers who could have done a better and more appropriate job.

¹²⁶ After the title of Raelin's book: *The Clash of Cultures: Managers Managing Professionals* (1991).

¹²⁷ According to some workers it needed a good dose of nitrogen fertiliser!

¹²⁸ John Law (1994: 163) discusses how the scientists he observed at the Daresbury Laboratory distrusted the "impression management" required to keep the laboratory funded and noticed in the world of "enterprise". He talks of "frontstage" and "backstage" performances (ibid.: 169).

Workers became human resources who had ‘capabilities’, which were disposable. In spite of the emphasis on retraining, ‘capabilities’ had a fixed connotation. If there was a reasonably good chance they might be useful to the company in the future they – the capabilities - were placed in a ‘capability bank’. When the company was ‘repositioned’ by changing the organisational direction some workers were discarded because their capabilities no longer matched what the organisation required, just like a piece of equipment that no longer serves a useful purpose. The language was one of objectivity, detachment and thus disassociation from the human beings involved. The reasoning was presented as logical and not able to be challenged.

6.6.3 Science as process, business as end product

The desire to be more independent of FRST funding, to be a successful business, and to satisfy Government policy for a knowledge economy, led to a clash between the science and business cultures within AgResearch. In the past, the end product of science practice was further understanding and knowledge of biological and agricultural systems. The knowledge gained was seen to be part of a much larger whole. This knowledge was to be used – these workers are applied scientists – but it was to be used by other people, for the country, for science or for the protection of the environment. The aim was ‘out there’. This may still have been the aim of the company but it was to be fulfilled through the company, by the company making a profit from exploiting the knowledge of those who work in it. The science institution had become a business. While scientists emphasised the conduct of science, AgResearch management emphasised the development of finite products from which money could be made for the company. Andrew summarised this change:

... CRIs were formed to service the sectors they are related to – dairy, meat, seeds, fertiliser, dah-de-dah. And between the chairman of the Board, Neil Richardson, and Keith Steele [CEO] ... they took a very liberal interpretation of that and even started to get to the culture of telling us that we weren’t there just to service the industries, we were there for the interests of AgResearch as an entity itself. So it was important for us to capture intellectual property and to exploit that in the best interests of AgResearch - not necessarily the sector groups we were set up to support. So if the biggest return for us with certain IP was to go to America or Denmark, wherever, to get a return on that then we should do that rather than New Zealand. And I felt uncomfortable about that ... I felt the obsession with maximising profit and chasing after commercial revenue at the expense of public good science revenue was harmful on science (Andrew, ex-employee).

Nearly every scientific worker I spoke to defined science as a process: a process of discovery; a process of gaining knowledge always incomplete; a process in which the scientist was only part. A scientist was building on the knowledge of those who had gone before, hoping that the knowledge s/he produced was reliable and trustworthy so that it would be a firm foundation for whatever came after it. A scientist was driven by a curiosity to find out, “What was going on here?” A scientist was a person who found that a solution to one problem just meant more questions and other problems! At the same time it must be remembered there is an endpoint of sorts. Part of the process of science is usually publication and this is a way of documenting the work done in the public arena. It is a record of a worker’s contribution.

This process view of science contrasted with business goals. In business, the end product is something that is saleable. It did not seem to matter that it still might have a few associated problems. In science, a product has to be tested and demonstrated to be of use, whereas in business the customer rules. Tim (business manager) talked of examples where a customer wanted something and a scientist refused to sell it because he said it had been scientifically demonstrated to be useless. The way the customer used it seemed to be for a different purpose than the one the scientist had in mind. For Tim, as a business manager, the response was that if the customer wants it then let the customer have it. An example of this is deer velvet, which AgResearch sells through its subsidiary company, BioProducts. Scientists find this disturbing as they say there is no evidence that deer velvet has any of the pharmaceutical properties its adherents claim. BioProducts counters this by saying it guarantees the purity of its product but it makes no claims for the product’s properties and the uses its customers may put it to. It is in the area of nutraceuticals that AgResearch wishes to do research because compared with the pharmaceutical market, nutraceuticals do not have to undergo rigorous research to justify their efficacy. The AgResearch science groups wanted their products to be as effective as they could make them, for the purpose they had in mind. The Endophyte Group was particularly cautious in this respect because it released one endophyte inoculated cultivar, Pacific ryegrass, in the early 1990s which was put into the market too early and had to be withdrawn. Fiona (technical worker) talked of a time when one of the batches of the MCG’s product Invade was non-pathogenic and somehow had been missed in the quality testing. The Group had to search out all the farmers to whom the product had been sold and

withdraw it. The need for a product to sell can conflict with scientist's need to be sure that the product will work satisfactorily.

6.6.4 Seller of products or objective scientist?

Scientists pride themselves on their objectivity and feel that this would be compromised if they became sellers of products. They would be seen to be pushing their product as better than that of competitors. Scientists feel that they should be the testers of the products, not a backer of one in particular. They find it difficult to see how they could act in both capacities and be seen as credible by consumers.

And hidden in all this is we're still trying to have a career path and still trying to publish stuff. But we are getting less and less time to do it, less and less money to do it. It's more tied up with - the principle that Keith [CEO] has, that we have these product teams ... and looking for a product champion. And they're even looking at science people as product champions. While I have a real enthusiasm for [a particular product] and have been seen, not only in New Zealand but also overseas, as being the person who should be able to push [it], once you start getting involved in that then you can compromise your science because you tend to sort of say, "Well okay, that result is significant but it's not particularly big, but look at these other things" ... and I can't see how you can remain a good scientist and be a product champion. Now that doesn't sit well with corporate. They seem to think you can. And if they're going to be pushing this line and talking about intellectual property, I think you'd be lucky if you get in *The New Zealand Journal of Ag Research* every three years at the rate they are going, because no-one's going to publish anything. They're not going to have the time and neither are they going to be allowed to because ... knowledge is power, knowledge is money. And if you've got knowledge you're not going to publish in a paper, if someone is going to turn round and say well hang on to it. And this is where a lot of scientists nowadays are having a struggle, because they're saying, don't tell anyone this, or don't tell anyone that. I mean I have the same problem as manager of this group here - going to people and saying, "Look, you have to keep the lid on that". And they jump up and down and say, "Look, that's not why I want to do science". But if you're going to do it within the confines of AgResearch or most other future research organisations in New Zealand then you're going to have to get used to it ... (Harry, scientist).

In this quote Harry also described other problems that come from seeing knowledge as a commodity rather than as science.¹²⁹

Some groups such as the Endophyte Group already had strong commercial relationships formed over a long period through their interactions with seed companies. These relationships extended to other areas in their work, not just

¹²⁹ Alongside this perspective is that in which scientific workers can be seen as 'capabilities' which can be 'leveraged' to produce knowledge for the 'knowledge economy' as the R&D Management's 2001 conference 'Leveraging Research and Technology' would have it.

endophyte. AgResearch decided to put a ‘client’ manager in charge of this commercial relationship. Members of the group were perturbed by this approach. They had formed these relationships over periods of ten to twenty years. As Ian (business manager) said, when he started certain people were low down in a particular company just as he was and as they progressed up their company ladders they maintained their relationships. Now they are all in management positions. They frequently developed personal friendships over that time. Many said the agri-business community is a very traditional one and relationships of trust take a long time to develop. By imposing a client manager over and above these relationships, AgResearch demonstrated a lack of value of these relationships, causing it to have little credibility in the eyes of its workers and in the eyes of the companies with which it did business. When AgResearch was suddenly presented as a business, senior management did not acknowledge the business relationships which workers in AgResearch were already part of.

6.6.5 Business: changing the use of time

A lot of time in AgResearch is now spent in a search for funding or in fulfilling commercial contracts. This way of spending time conflicts with what scientists would like to be doing. For example, scientists I interviewed thought the pursuit of scientific excellence was their primary aim and claimed the only way it could be measured was by publication. They felt this was under threat. As Gaye (scientist) indicated in her interview, she no longer has as much time to do experiments with sufficient replication and quality for publication. They might be acceptable only for conference presentations. The pursuit of commercial funding and following the ‘flavour of the month’ themes in science mitigate against the pursuit of excellence because excellence takes time. Science is a long-term enterprise.

Scientific workers with less time have to put to one side interesting things and serendipitous events that crop up along the way which could be useful to pursue. When a worker has certain objectives to achieve in a certain time there is no place for pursuing something just because it looks interesting. Sommer expressed a concern that the discovery element of science was being lost.¹³⁰

¹³⁰ Pers. comm. 8-5-01.

6.6.6 Commercial secrecy

It could be argued that the requirements of commercial secrecy are no different from those of scientific secrecy. Science is a competitive enterprise just like business. Scientists make great efforts to publish only aspects of work which will not give any clues to competitors. This is not a way of perceiving science that scientists often acknowledge. They talk of the openness of science and the sharing of knowledge. What they do not say is that this is so only once the knowledge has been published and owned by the scientists concerned. There is also the concern for patents and the restriction that may place on publication. Most scientists, however, felt this was not too much of a problem for them as it only delayed publication for up to six months. Some did feel differently. Don (scientist), for example, felt his manager had delayed his career. The ongoing work required to gain a patent meant he had to postpone publication for over 18 months at a time when he wanted to establish his reputation in the international science scene.

Sometimes there can be a decision not to seek a patent because that would be giving away commercially sensitive secrets. This can stop publication completely and means there is no possibility of verification by the science community. One PhD student found this out to their detriment when the secret result their work was based on, proved incorrect.

The risk of disclosure of material that could eliminate a patenting opportunity has led to scientists developing skills they did not have before. With patents being seen as an important addition to a scientist's CV, secrecy is doubly important. Patents can only be applied for if there has been no previous reference to a work in the public domain. Harry (scientist) told me how he and his business manager had to spend a day and a night before a European conference applying for provisional patents because they suddenly realised the importance of his paper. Len discovered several years ago that he had inadvertently published some information which later meant that something could not be patented. His publication had been vetted and fulfilled the programme objective required but his divisional manager continued to blame him personally for this loss. Scientists have to pass their publications through many hoops in case they are giving away secrets the company may want to use.

Scientists have had to become aware of what they can say and what they cannot say at field days or other public occasions. They cannot be seen to be supporting one company over another, or giving away information that could prejudice another company's business. Tim (business manager) had to prime up Todd (technical worker) before they went to meetings with potential clients so that Todd did not tell them too much about his product for which he had an overwhelming enthusiasm, for the client could go elsewhere with the information. In a conversation with a senior lecturer in Animal Science at Lincoln University,¹³¹ I was told how, at a South Island Dairy Event, the scientists from AgResearch were wary of saying anything at all because of the IP implications. Learning what you can and cannot say impacts on scientific workers desire to share what they are doing and may affect their stimulus for innovation and creativity. They can no longer engage in free conversation. They have to think suspiciously rather than collegially.

6.6.7 Middle management: caught between the corporate vision and science

The impact of AgResearch's policies and their ambivalent reception was particularly apparent at the SPL level, as mentioned earlier. SPLs were in a difficult position in the organisational structure - seen by senior management to be the enforcers of the new direction and of organisational values while their success was dependent on the groups under their management. They were expected by senior management to have a 'One AgResearch' vision but their success was more likely to be reliant on meeting their budgets and getting funding. Bate (1998: 69) describes middle management as subscribing to a segmentalist culture while senior management, who naturally have an overview of the organisation, subscribe to a unitarist culture.¹³² SPLs could be seen to be adapting to the views of senior management by accepting better pay to 'manage', however, two SPLs told me they accepted management positions to maintain a good environment in which *others* could do science.

¹³¹ Denis Elvidge, pers. comm. 10-3-01.

¹³² Bate (1998) himself subscribes to a 'both-and' culture. He thinks there needs to be a mix in organisations and what is important is whether "there is a 'fit' between the form and its environment" (ibid.: 71). Primarily AgResearch has had to demonstrate to Government (shareholders) that it is changing to fit the environment, as prescribed by Government policy and enforced by FRST. Most organisational culture theory says organisations have to respond to their external environment, e.g., Nilakant and Ramnarayan (1998).

Evan (SPL) is aware of the risk of uniformity demanded by the ‘One AgResearch’ vision and its challenge to the ‘psychic self’, as Catherine Casey (1995) would call it:

... personally, I think that there is a danger of looking for too much conformity and uniformity. We’re not Dekka, we’re not the NZ Army, we’re not Harcourts. You know, we are a bunch of fairly intellectual individuals and I think there is an over-estimation of the effect that training courses can have on achieving conformity and uniformity. Personally, I think AgResearch could do well to celebrate diversity and maximise the value from that diversity ... So, I think that this idea that the Science Leaders can kind of control their so-called Platforms to a degree of precision and uniformity is not true. I don’t think it can be done. That’s what worries me a bit right now (Evan, SPL).

In conclusion, this section has demonstrated the conflicts experienced by workers when their organisation developed a business emphasis and how they have responded to this by emphasising that their priority is science.¹³³

6.7 Conclusion

In this chapter I have described and made a preliminary interpretation of the responses of scientific workers in AgResearch to the changes they experienced as a result of the restructuring of the system for the public funding of science. In this initial interpretation I have been influenced only minimally (where mentioned) by my reading of any academic literature on the topics of work and management. What I observed is that scientific workers adapted to the changes in their organisation and to the funding system in order for their work to continue, but they have mainly been able to carry on with their work by practising different forms of quiet resistance. Many of these forms of resistance act to distance them from organisational communication. This protects their identities and enables them to receive the feedback from their work of science described in Chapter 5. When taken together these examples demonstrate the many tactics workers had in their ‘tool box’,¹³⁴ which enabled them to negotiate and protect valued ways they had of making their working lives meaningful. In the final section I have demonstrated how some of the values and ways of doing science conflict with the ways of doing business, and how scientific workers give priority to ‘doing science’.

¹³³ For another description of this conflict see ex-AgResearch scientist’s book, *Science Friction* (Edmeades, 2000).

¹³⁴ A reference to Foucault’s “box of tools” (Shumway, 1992: 159) or “tool kit” (Macey, 1993: xx).

Conclusion to Part B

In Part B I have explained how the feedback scientific workers receive from their work is important to them for reinforcing valued aspects of their identity, and how this feedback may differ between technical workers and scientists. I have described how this identity was often based on the heritage of the past – what was valued and important in society when attitudes to work were being formed for these workers. The feedback scientific workers get from belonging to their work group is very significant to them. For scientists, the feedback from belonging to the scientific community and its claims of excellence is important. The exclusiveness of this community was described, as was the way in which some scientists use it to close themselves off to outsiders in order to resist interference from Government policy and commercial interests. The lack of value placed on input from non-scientific sources by some scientists was also established. Because the culture of science emphasises autonomy at the expense of personal feedback, the practice of science has become a very powerful feedback mechanism for scientific workers. It reinforces the ideas these workers have about themselves, such as their trustworthiness, skill and accuracy. The practice of science also rewards them in many other ways. On the other hand, the culture of the organisation in which they work, through corporatisation and a focus on accountability, is perceived to not value them in the same way, and at times interferes and conflicts with the things that are important to them. They respond to this in many ways, most of which enable them to continue to do the work that is important to them; however, the majority feel compromised and unhappy.

At the beginning of this research I was concerned that workers spent a lot of time moaning, complaining and being cynical about the management of the organisation and I felt they should be doing something about it. What I have learned is that this behaviour is serving the purpose of distancing workers from caring too much about and believing in an organisation that may well let them down. It protects them from making personal changes to their beliefs about themselves that may not work for them in the future. It protects them from changing the ideas they hold about their work and the implications these changes would have for their identities. There are, however, inevitable conflicts and risks when ‘doing science’ conflicts with ‘doing

business'. In spite of all the responses these scientific workers made to enable them to continue their work, the fact is that they still complained and most of them were not happy at work. This environment and the behaviour required of them in it was very stressful.

There was a tired scientist at Lincoln
 Who eventually got around to thinkin' –
 Why did I study for years
 And get all these grey hairs
 When AgResearch seems to be sinkin'?

Ten years for a crime I didn't commit
 A bloody long time you'll have to admit
 I'm dreaming about an early release
 No problem said FRST, your funding will cease ...

(Limericks written to celebrate the tenth anniversary of AgResearch, 17-7-02.)¹³⁵

In Part C I will report on some of the related sociology of work literature which my initial foray into the AgResearch data provoked. I will also take another look at the context of this research, and then, informed by these ideas, consider again the response these scientific workers made to the circumstances in which they found themselves.

¹³⁵ RSNZ (2002: 3): "Science and technology remuneration ... offers insufficient compensation for the years invested in training ..." etc.

PART C: FURTHER ANALYSIS INFORMED BY THE LITERATURE

During the first analysis of the case studies I became aware that two of the major themes were the meaning of work for scientific workers, and its relationship to identity. These two themes did not have sufficient depth. It was not enough to just describe this meaning. There was something else happening in this situation that made these workers unhappy. Why did they complain so much when they were also telling me about how they placed so much importance on their work, and describing it with so much enthusiasm and obvious enjoyment? I started reading more about resistance. Often the discussion and arguments in the literature did not fit what I had observed. Usually the literature focused on blue collar workers in factories and industrial situations. It was to do with forms of conflict that I had never observed, such as pilfering, sabotage and wasting time (e.g., Mars, 1982). Only some of the labour process writers (Knights and Morgan, 1991b; Collinson, 1994, 1992; Knights and Collinson, 1987) (with the introduction of subjectivity) and one or two Americans (Ashforth and Mael, 1998; Hodson, 1991; 1995a, 1995b) seemed to take seriously the accounts of the workers themselves. The latter, however, were not referring to particular empirical studies but reflecting on the topic in general. Even these writers placed a greater emphasis on macro issues rather than on what was going on for workers. I became aware, thanks to a seminar given by Perkins and Thorns,¹³⁶ that I was studying how this group of people at AgResearch were *making* their work meaningful and were resisting the things which contested that. It seemed to me that writers taking a Foucauldian approach (with their interest in subjectivity) and/or those adopting a labour process perspective or an organisational culture approach, while concerned about identity, were stripping away the very things that I considered to be important. In their desire to uncover relationships of power they disregard the ways in which people act to negotiate and mediate the impacts of power in order to make their lives meaningful. This emphasis on ‘making meaning’ is exactly what I have *not* found in any literature. It is what my research offers.

¹³⁶ *Studies in Human Settlement*. Seminar, Lincoln University Human Sciences Division, 7-3-02.

I then became aware that a focus of much of the resistance literature, and more widely, the industrial sociological literature, was on methods of work control which were not a common feature of AgResearch management. A particular form of control called ‘normative control’ (Ashforth and Mael, 1998: 113) most closely described what I was observing. Normative control is a system of management in which attempts are made to regulate the thoughts and feelings of workers to align them with particular organisational values (ibid.). Attention to this as a conscious form of work control only surfaced in the sociology of work literature in the late 1980s (e.g., Rose, 1988¹³⁷). Actual research studies of organisations in which it was practised started appearing in the 1990s (e.g., Kramer and Neale, 1998; Bate, 1998[1994]; Casey, 1995; Jermier, Knights and Nord, 1994; Kunda, 1992; Sturdy, Knights and Willmott, 1992b; Kondo, 1990). This aspiration on the part of management to consciously control the beliefs and attitudes of workers through normative control was arising at the same time as the New Zealand Government’s restructuring endeavour. State sector organisations were developing management structures to ensure accountability and efficiency of workers. It is not surprising to see the two – accountability and normative control - coming together in AgResearch.

In Chapter 7 I discuss some of the literature relating to work, in particular the story of how the contested nature of the meaning of work between employers and employees has led to the development of the normative control of work. I will examine the responses of workers to such control as observed and interpreted by other writers, although I will be focusing only on the literature that I see as relevant to the themes and ideas that were arising in the data from Part B. In Chapter 8, through reflecting and building on what others have said about work and its meaning, I extend the analysis of the data further to finally develop two models of resistance which encapsulate the responses of those I have been studying.

¹³⁷ In the first edition of this work (Rose, 1978[1975]), the author does not mention this form of work control.

PART C: FURTHER ANALYSIS INFORMED BY THE LITERATURE

Chapter 7: The sociological literature on work

This chapter gives a brief summary of the relevant ideas from the sociological literature which were useful in furthering the analysis of the themes developed in Chapters 5 and 6. The first section outlines an understanding of the meaning of work, particularly the function it was believed to fulfil in society, covering the seminal ideas of Marx, Simmel, Durkheim and Weber, and more latterly Habermas. The next section follows the development of the ways in which work has been controlled, leading on to the third section on the most recent form of control noted in academic writing, normative control. The fourth section, on workers' responses to this form of control, includes a discussion of resistance. The chapter concludes with a consideration of the relationship between work, scientific research and the role of Government.

7.1 The meaning of work

In Chapter 5 I described the first emergent theme arising from the data analysis – the meaning of work to those I studied. Attitudes to work and how workers should be managed can be traced back a long way. The Bible begins with two accounts of the creation of humankind: in one, humans are created to care for the earth God has just created; in the other, humans are condemned to work for the length of their lives because they have sinned by eating the fruit of the forbidden tree. In the former account, work is something that is part of being human. It is why we were created. To not want to work is unnatural. In the latter account work is a punishment and in order to be saved from our sinfulness we will always have to work. In each account there is the hint that humans may resist work and that to do so is somehow wrong. Each account expresses a different view of human nature. In the first humans are “benign” and in the latter “egocentric” and self-seeking (Tausky, 1995: 20). The latter account contains the idea that workers need to be coerced into working. This attitude relates directly to the implied distrust of workers in present systems of management which emphasise accountability and efficiency.

Why do we work? Is it a way of gaining money/pay in order to realise our potential (and I would say, negotiate our identity) outside work, or is it at work that we realise our potential? Workers in AgResearch cover the whole spectrum of these extremes. Mainly they demonstrate that at work they are striving to reach their potential and to fulfil a purpose, beyond what they earn. The former point of view was espoused most strongly by Adam Smith (Grint, 1991: 23). The latter view is espoused by Marx and is also the basis of the Protestant work ethic. When work is not a place where we realise our potential and fulfil a larger purpose in life, then we become instrumentalists, we separate work from the rest of life (Goldthorpe et al., 1970: 39). Everyone needs to ‘make meaning’ by believing that they have contributed to something that will live on after they die (Durkheim, in Burrows and Lapides, 1969: 53). Gini (2000: 73), with reference to Victor Frankl, writes in a similar frame:

... [we] need to feel that our lives, our efforts, make a difference to others, and to be denied this recognition is to be diminished in our humanity. Because so few of us feel we are part of a larger purpose, we lose ourselves in the pay-off, the paycheck, and are driven solely by the goal of pecuniary well-being. The primary meaning of our labor is reduced to what it allows us to get or buy. We no longer work to create or contribute but only to consume.

Some writers relate instrumentalism directly to capitalism. Capitalism is seen as turning labour into a commodity: “Employees resort to economically instrumental behaviour when, to paraphrase Oscar Wilde, capitalism puts a price on everything (i.e. labour as a commodity) while valuing nothing” (Knights and Willmott, 1999: 80). Whereas for me, instrumentalist behaviour may just mean that some people strive to fulfil a ‘larger purpose in life’ outside the workplace.

This section is divided into two major parts. The first details how the ‘founding fathers of sociology’ influenced the development of thinking about work, and how their writings have led to my interest in using the words ‘estrangement’ and ‘alienation’ to describe the experience of the workers I observed in AgResearch. The second part outlines the concern of contemporary writers for what is happening in society and its influence on the world of work.

7.1.1 The influence of the ‘founding fathers of sociology’

It is generally acknowledged that there are three chief theoretical influences in the study of work, Marx, Durkheim and Weber, “the founding ‘gang of three’ ” according to Grint (1991: 104). The ideas of each give important support to my

study, and each, in their own way, is remarkably prescient. From Marx comes the concept of the creativity of labour and the argument that workers can become alienated from the product of their labour; from Durkheim comes an understanding of the balance that is required between the need for humans to belong to society and the control exercised by belonging which contributes to social cohesion; and from Weber comes an awareness of the development of so-called ‘rational’ systems of control of work, which may not actually help human well-being, a point conveyed by Weber’s use of the bleak descriptor, the “iron cage” of bureaucracy.

Marx (1818-1883) “saw human estrangement as rooted in social structures which denied people their essential human nature”, and that “this human essence was realized in labour, a creative activity carried out in cooperation with others by which people transformed the world outside themselves” (Abercrombie, Hill & Turner, 1988: 8). The ‘young Marx’ developed the concept of alienation from philosophical and religious sources. He related it both to the feeling workers had in a capitalist system and to the economic and social structures of capitalism. For him, workers had a sense of powerlessness. Their work was meaningless because of the way the ‘division of labour’ turned work into a commodity. This dissociated workers from their labour and resulted in a self-estrangement or alienation from their ‘human nature’ – their essential human self - that made them distinct from animals. With this denial of the satisfaction of their labour, workers became instrumentalists (Goldthorpe, Lockwood, Bechhofer, & Platt, 1969: 165). At the same time their involvement in a market economy caused workers to become competitors, isolating them from each other (Grint, 1991: 92; Abercrombie et al., 1988: 8-9). The ‘mature’ Marx referred less to the concept of alienation, replacing it with the harder-edged concept of the exploitation of the working classes, defined by a labour theory of value (Abercrombie et al., 1988: 9). It is the idea of alienation that interests me here because it articulates one of the reasons why scientists in AgResearch demonstrate evidence of resistance. They are resisting losing control over the direction and the product of their research; their work becoming a commodity; the denial of their human qualities; and being judged by market success (ibid.: 8).

I wish to use this concept of alienation, and keep it separate from the way the concept was enlarged upon by Marx and later mid-twentieth century writers to encompass

feelings of self-estrangement. By doing this I am able to distinguish between scientific workers' response to change as estrangement compared with an additional response particular to scientists, that of alienation. I will use the word 'estrangement' to encompass the experience of scientific workers: their feelings of not belonging, not fitting, not being able to make a valued contribution, and the sense of insecurity these experiences engender.

The expression 'self-estrangement' has a long sociological history. Marx appears to have used its equivalent within his alienation concept through the influence of Hegel: "Alienation from self (spiritual)" appears in an index of Hegel's translated work (Kaufmann, 1971: xviii). Grint (1991: 92) writes of workers not being able to achieve "self-realization" through their work. Simmel (1858-1918), concerned about social interaction, wrote three works of particular interest. In the first, *The Metropolis and Mental Life*, Simmel (1950a) delineates the dilemma of the metropolis: in order not to be over stimulated by the life in the metropolis, people have developed an emphasis on the intellect, allowing them independence from what is going on around them. The price one pays, however, is "one nowhere feels as lonely and lost as in the metropolitan crowd" (ibid: 418).¹³⁸ This work demonstrates how, a century ago, a perceptive writer was aware of the impact of distancing on human well-being. In his work *The Philosophy of Money*, Simmel (1990[1900]) links this development of self-consciousness with the rise in the use of money. In the third work, *The Stranger*, (Simmel, 1950b) the role of the stranger or outsider is portrayed as necessary to a group; the stranger may act as a 'trader', for example, bringing 'products' from the 'outside' into the group or taking their 'products' to the 'outside'. "The stranger is by nature no "owner of soil" – soil not only in the physical, but also in the figurative sense of a life-substance which is fixed, if not in a point in space, at least an ideal point of the social environment" (Simmel, 1950b: 403). Simmel does not examine the power balance between the stranger and the group but emphasises more its mutuality. In this sense, Simmel's 'stranger' is in fact the managerial staff in an organisation like AgResearch. Such staff could be viewed as acting as go-betweens or mediators between the world of science and the world outside science. Ironically in this world, it is the scientific workers who are actively feeling like the 'strangers'.

¹³⁸ Foreshadowing Riesman's *The Lonely Crowd* (1950).

Perhaps the work of Simmel clarifies the need for management and scientific workers to be aware of their mutual, interdependent relationship, rather than one in which the power is vested predominantly in one group.

The concept of self-alienation became popular in post-World War II America under the influence of refugees from Germany and Austria (e.g., Erich Fromm, Hannah Arendt) (Kaufmann, 1971: xix). To develop further this idea of estrangement I have selected the work of Blauner (1964), one of many possibilities. In his book, *Alienation and Freedom*, Blauner operationalised four dimensions of alienation to explain his observations of the behaviour of factory workers: powerlessness, meaninglessness, isolation and self-estrangement. For Blauner (1964: 16-22) ‘powerlessness’ relates to a work situation in which a worker cannot be self-directed and/or is not free to leave a job for alternative employment. Traditionally, according to him, there have been four areas of interest relating to powerlessness:

- (1) the separation from ownership of means of production and the finished products, (2) the inability to influence general managerial policies, (3) the lack of control over conditions of employment, and (4) the lack of control over the immediate work process (ibid.: 16).

The latter two areas are not applicable to AgResearch workers. The first I wish to bracket as the description of alienation I wish to use (see earlier). I would like to include the second area and that of insecurity of employment, in my concept of ‘estrangement’. To AgResearch workers, work is a very meaningful activity when constructed by their reasons and purposes for doing it. To Blauner ‘meaninglessness’ indicated a lack of a “sense of purpose” in work (ibid.: 22) and so is not relevant to AgResearch workers. Blauner describes his third dimension, ‘isolation’, as “the worker feels no sense of belonging to the work situation and is unable to identify or uninterested in identifying with the organization and its goals” (ibid.: 24). His final dimension, ‘self-estrangement’, describes a worker who “may experience a kind of depersonalised detachment”. This may be “a threat to a self-approved occupational identity” (ibid.: 26), a pre-condition to the development of an instrumental attitude to work (ibid.: 27). I wish to incorporate these last two meanings into my definition of ‘estrangement’ as they describe not only the sense of ‘not belonging’ and powerlessness to do anything about it, but also how this can lead to distancing and instrumentalism. This then challenges a worker’s identity and its association with the meaning of work.

Workers throughout AgResearch blamed the organisation and the CEO in particular for any discontent they felt. Other writers have taken the concept of alienation further by calling this process 'reification'. For example, Berger and Luckmann (1967, cited in Seidman, 1994: 130) saw it as "an almost natural, inevitable property of the social worlds that we create, to take on an object-like character".

The second person to influence theories of work is Durkheim (1858-1917), who was concerned about "social solidarity and cohesion during a time of rapid social and economic transition" (Grint, 1991: 101). Durkheim argued that people's capacity for greed was 'inherently infinite' and so for society to function there needed to be societal norms which people internalised and that restrained this human tendency.¹³⁹ In his study of suicide, Durkheim identified four types of situations in which people were more at risk of suicide. Two are of interest here. The first is 'egoistic' when individuals are responsible for their own salvation and the second is 'anomic' which is the condition in which people experience a state of 'normlessness', a conflict of norms (Abercrombie et al., 1988: 78-80) or an "anarchy of selfishness" (Grint, 1991: 101). These two are of interest because they indicate that in situations where people are left to themselves and have a lot of autonomy they may feel unconnected to society and unappreciated.

Clegg and Dunkerley (1980: 24) link the 'egoistic' and 'anomic' concepts to the impact of the encouragement of excessive individuality. This is a common state of affairs for scientists as members of the science community, which has a strong emphasis on personal autonomy. 'Belonging' plays an important part in social cohesion. Durkheim thought that as the role of the church, family and state declined, the workplace, via the refurbishment of the medieval guild system, could take over some of the functions these groups had performed by "providing a kind of moral and social center for the individual" (Seidman, 1994: 66).

Weber (1864-1920), the third of the 'founding gang', argued that "sociology had to aim at the understanding of the meaning of actions" (Abercrombie et al., 1988: 268).

¹³⁹ The development of normative control (see Section 7.2 later) could be seen as consciously applying Durkheimian thought to the workplace community.

The methods of research that I am using owe a lot to this ‘interpretive method’ or *verstehen*, as Weber called it (Grint, 1991: 107). Weber also believed that there would be a “decline of magical interpretations and explanations of the world, and the gradual elimination of all mysteries, as science exploded more and more mythical assumptions” (ibid.: 108). He posited that there was a dominant trend in capitalist society, which, by a process of ‘rationalization’, would come to understand human actions. This knowledge could be then applied to the way people are organised in a ‘bureaucracy’ in order for them to work more efficiently. At the same time, Weber understood that this increasing rationality would convert “capitalist society into a meaningless ‘iron cage’ ” (Abercrombie et al., 1988: 268). He was chilled by what he saw as the inevitable spread of rational systems of administration driving out less rational, but more ‘human’ systems (ibid.: 268-9; Grint, 1991: 108-111).¹⁴⁰

7.1.2 Concerns about what is happening in the world of work

The analyses of work and organisation provided by Marx, Durkheim and Weber are reflected in the struggles workers in AgResearch are experiencing as they try to make their work meaningful in a changing environment. These struggles are reflected also in larger debates, evident in a broad range of literature, about the sort of world we are now living in and its implications for work. Many scholars and seers are interested in what is going to happen to work in the future (e.g., Beck, 2000; Freidson, 1994, 2001; Ransome, 1999; Thompson and Warhurst, 1998; Organisation for Economic Co-operation and Development (OECD), 1994). Their concerns cover many issues. Beck (2001: 4) points out that insecurity is endemic at all levels of society. He is worried that democracy will be destroyed by the quest for profit. Grint (1991: 3) reminds us that when “employment is configured and constrained” by market forces, it is forgotten that work is also “a social and moral sphere”. Workers’ actions can be seen as irrational in one sphere but rational in another. Freidson, the most eminent writer and thinker on professions over the past thirty years, believes that professionalism brings a meaning to work that is missing from the two dominant ‘logics’ of work (Freidson, 2001: 106): the free labour market (consumerism) and the “rational-legal bureaucracy” (managerialism) (ibid.: 5). At the centre of issues raised

¹⁴⁰ The rise of Islamic militancy in the 21st century indicates the prescience of Weber, who believed that ‘charismatic’ authority was the one way in which the inevitable trend towards domination by ‘legal-rational’ authority might be disrupted.

by the ideology of professionalism “is the question of the proper role of knowledge in political and social life” (ibid.: 106). Rather than just using knowledge to maximise profit and efficiency, professionals would also want to use it to benefit society, ideally those in need (ibid: 121-123).¹⁴¹ An example of such a figure is Bruhn (2001), who writes, “the opportunity to be good and to do good is what motivated us to become health professionals” (ibid.: 3). These reasons for work are no longer being rewarded in the current environment (ibid.: 8).

My research demonstrates that scientific workers in AgResearch have exhibited a growing division between their beliefs about the purpose of their work organisation compared with that espoused by management. Concerns about bureaucracy and its emphasis on efficiency have surfaced also in comments by other New Zealanders. The State Services Commissioner expressed his worry that management impacted on standards of integrity and cost cutting: “[M]anaging outputs endangers the long-term health of organisations”.¹⁴² Brian Easton (2000, 1995), a long-time commentator on economic policy and its impact in New Zealand, writes, “teachers, researchers, health and other professionals, the suppliers of services” find themselves working within a “management structure that seems to have objectives of its own, independent of the apparent purpose of the institution” (Easton, 2000: 56). In a reflection on the ‘New Zealand experiment’, Nagel (1997: 354) asks the question, “Should efforts to restructure public management derive only from the economist’s dour image of human behavior?” He wonders if other motives apart from economic should be used to encourage work in organisations (ibid.).¹⁴³

Those who presently work in science have their professional scepticism conjoined with a general societal atmosphere of distrust. In the 2002 series of Reith lectures, *A Question of Trust*, for example, Onora O’Neill (2002) in her third lecture, considered

¹⁴¹ This is Sarewitz’s (1996) concern also. However, it challenges my notion that many professionals serve those who are already privileged, e.g., lawyers, medical specialists, architects, engineers. Professionals who do not ‘serve’ the privileged are becoming less privileged in our society, e.g., nurses, teachers (at all levels of education), general practitioners, and scientists.

¹⁴² *The Press*, 30 December 1999, p.9.

¹⁴³ Nagel (1997: 354) suggests these could be “social, moral, and intrinsic motives; inspirational leadership; and strong cultures devoted to excellence and service (even if service is now viewed as rendered to identifiable customers rather than to a generalized public).” Some of these motives bear remarkable resemblance to elements of normative control! (See Section 7.3). Also there was a definite preference from my respondents for service to a “generalized public” rather than particular customers/clients.

the relationship between distrust and the emphasis on accountability in society at present. Bruhn (2001: 1, citing Carter, 1996) states: “the people of the United States have a serious problem: They neither mean what they say or [*sic*] say what they mean. Moreover, they hardly expect anybody else to mean what they say”. He comments that this has flowed on to a mistrust of government and other institutions (ibid.: 2). In New Zealand the “loss of public confidence in the institutions of government, politicians and public servants” has been lamented by the State Services Commissioner.¹⁴⁴ Brian Easton pointed out that it works both ways: “the new management style requires greater controls in the name of “accountability” and abandons the principle of personal responsibility” (Easton, 2000: 56).¹⁴⁵ Some writers promote scepticism (Breeling, 2001), and cynicism, because it is seen as an important dimension of moral decision-making (Turner and Valentine, 2001).¹⁴⁶

Hill and Turpin (1994: 351-355) use Habermas (1984, 1987) as a reference point to interpret what is going on in society. Habermas contends that how we live in the world has been taken over by systems – “systems of education, administrative power, and most important of all, market systems”. This has made making meaning complex and difficult for people. Society has developed “steering media” to simplify this ‘making meaning’ process. The prime steering media, according to Habermas, are money and administrative power (Hill and Turpin, 1994: 352). Using this scenario, one could argue that scientific workers, by not valuing their work principally for the monetary reward it brings and not having a desire for managerial power, no longer fit within a society that measures success by these values.

I place my research in this societal context and in the context of the development of different methods used to control work and workers in particular, foreshadowed by the work of Marx, Durkheim and Weber. I now wish to explore how systems of work control developed historically in order to understand what was happening in AgResearch.

¹⁴⁴ *The Press*, 30 December 1999, p.9.

¹⁴⁵ In other words, accountability is about systems. See reference to Habermas in next paragraph.

¹⁴⁶ Now that cynicism is deemed to be a ‘good’ quality for employees to possess, Turner and Valentine have even devised a questionnaire to measure it!

7.2 Control of work

During the industrial revolution there was no general theory of organisation (Littler, 1982a: 123). Out of reflections on this period of history arose the seminal ideas of the three ‘founding fathers’ that have led to strands which have continued through the construction of working systems to the present day. From Marx we received the understanding that ‘workers’ in the capitalist system were ‘alienated’ from their work, and an awareness of fear on the part of employers and governments that if workers were not controlled there was likely to be anarchy, if not revolution.

However, while an employer hires labour power, labour still has a certain amount of ‘discretion’ over how their labour power is to be used. This means “... management are forever seeking new strategies or tactics through which that discretion can be deflected” (Clegg, 1994: 283). Taylor offered a ‘solution’ to this tension inherent in the capitalist labour process, a tension highlighted by Marx in his labour theory of value. Taylor thought of workers as machines who, with particular individual skills, could each complete a part of an industrial process while overseen by managers who had an understanding of the whole system. The result would be greater efficiency and workers would be happier because their jobs would match their skills and intelligence, and they would earn more by way of bonus payments. They were not required to ‘love’ the company but they were expected to appreciate the greater instrumental/economistic rewards made possible by the ‘scientific management’ in the company (Grint, 1991: 121, 185-188; Abercrombie et al., 1988: 215-6).

From Durkheim we received the understanding that through strengthening societal (and therefore group/team/organisational) norms, people’s excessive desires would be controlled; they would experience a feeling of belonging, which would protect them against anomie (Clegg and Dunkerley, 1980: 28). By taking up this idea, the Human Relations ‘movement’ was able to draw attention to the need for a ‘happier’ work environment which it was believed would result in higher production (ibid.: 122-135).¹⁴⁷ Communities formed at work, according to Mayo and other leaders of the Human Relations ‘movement’, would counteract the fragmentation of society (ibid; Grint, 1991, 123-127; Rose, 1978: 103-146).

¹⁴⁷ “What the Human Relations theorists did was to produce a highly developed ideological apparatus of normative control, of hegemony, for the management of organizations” (Clegg & Dunkerley, 1980: 135).

From Weber we received the idea that work practice could be studied in order to understand it; then that knowledge could be used to develop systems which would make workers more productive. The system of corporatisation has been part of this development. In Chapter 6, I described how AgResearch management, as part of the corporatisation of the organisation, communicated a strategic plan with its implied development of an organisational culture which would support organisational goals, particularly through the development of products which would make a profit for the company.

Edwards (1979: 11-22) saw systems of work control as passing through certain stages of development by employers as workers resisted them and further developments were made to counter that resistance and so on.¹⁴⁸ Initially, in the workplace, hierarchical control was all that was required. As work organisations grew and the technology became more complex there was the need for greater control of how work was done (technical control), and for bureaucratic control in the form of rules and policies. These have been called external controls and merely required an employee to conform to them. As Ashforth and Mael (1998: 92) state: in such systems “the hands matter, but the head and heart do not.” Incorporating internal control or self discipline (as Clegg names it – with reference to Foucault) in workers, however, would decrease the costs of supervision, and hence increase global competitiveness and efficiency (Clegg, 1994: 282-3). Kunda (1992: 12) endorses this view. This ‘internal’ system of work control has become known as ‘normative’ control.

7.3 Normative control

To function effectively, organizations must regulate the activities of their members in the service of organizational goals. Increasingly, controls that regulate behaviours are being complemented or supplanted by normative controls that regulate the very thoughts and feelings of members. Part of the normative freight conveyed by such controls includes organizationally endorsed values, beliefs, modes of sense-making, and definitions of the organizational self. Because individuals have existing and emerging self-conceptions abstracted from experiences and roles beyond their organizational involvement, the imposition of

¹⁴⁸ Barley (1992: 1) argues against this perspective. He “challenges the prevalent notion that American managerial discourse has moved progressively from coercive to rational and, ultimately, to normative rhetorics of control”. He suggests that rather there have been surges and contractions between these different rhetorics since the 1870s.

definitions may be perceived as threatening and trigger ambivalence toward the organization. In this light, resistance can be seen as a contest for meaning, a way of asserting or preserving a valued sense of identity independent of – or antagonistic to – the organization’s definition (Ashforth and Mael, 1998: 113).

This section describes normative control, answers the questions of why workers would want to resist this form of control, and if resistance is in fact possible within such a powerful system. It outlines the contribution Labour Process Theory has made to the study of resistance, particularly with its introduction of subjectivity. The section concludes with a discussion of the link between identity and work, particularly how competition fosters individualism. Thus it positions this thesis as a study of the impact of a system of normative control on scientific workers.

7.3.1 What is normative control?

Rose (1988: 9-12) postulates five main ways in which employers can control workers. These are: through the terms of employment, the work organisation, the supervision structure, employee representation, and the frameworks of interpretation held by personnel. This latter form of control has come to be called ‘normative or cultural control’ (Bate, 1998: 38-42; Ashforth and Mael, 1998: 113) and is recognised as becoming a common practice in work organisations (Knights and Vurdubakis, 1994: 173 referring to Rose (1987)). This awareness came about as such academic writers as Hassard, Holliday, & Willmott (2000), Casey (1995), Willmott (1993) became aware of the impact of the so-called changing forms of managerial practice advocated by writers such as Peters and Waterman (1982), Peters and Austin (1985), Crosby (1984) and Kanter (1984). For example, Van Maanen and Kunda (1989, cited in Hassard et al., 2000: 7) claim that these writers assert that all the “(emotional) obstacles to managerial rule” can now be managed so that autonomy becomes exercised within the shared values espoused by the organisation (also Willmott, 1993: 525). The fifth theme of Rose (1988) is an echo of Etzioni’s (1961) work – the latter being the earliest source in which I found a reference to ‘normative power’. Etzioni classifies power in organisations as having three dimensions, ‘normative power’ being one of them (Etzioni, 1969[1961]: 60-62). Sturdy et al. (1992a: 5) link this sense of changing control patterns to Burawoy (1979) and Edwards (1979). Kunda (1992: 11-12) describes such control as “the attempt to elicit and direct the required efforts of members by controlling the underlying experiences, thoughts, and feelings that guide their actions ... a sort of creeping annexation of the

workers' selves." By "practices of symbolic management (e.g., mission statements, stories, rituals, physical setting) and substantive management (e.g., strategy formulation, reward systems, budgets, information systems)" an organisation imparts the "identity, seminal goals and values, prevailing beliefs and assumptions, and behavioral norms" expected of its workers (Ashforth and Mael, 1998: 92-93).

The Organisational Culture school of thought (e.g., Child, 1988; Handy, 1985[1976]) proposes that organisations work best if the goals of an organisation match those of the people who work in it (Grint, 1991: 131). According to other theorists from this perspective, organisational change is about changing the culture to fit the environment in which an organisation finds itself.¹⁴⁹ ¹⁵⁰ The problem then arises when an organisation brings these two strands together: when it seeks to impose this new culture on the cultures already practised by those in the organisation. Bate (1998)¹⁵¹ thinks that any organisation considering a strategy of cultural development sees its primary function as one of control. He describes this strategy as the manipulation of culture to bring about a "love of the firm and its goals" in order to increase productivity (ibid.: 38). Bate outlines three levels of organisational control, one of which is "a form of ideational control that works by controlling the way people think rather than their behaviour – in short, mind control" (ibid.: 39). He suggests a fourth: "Control exercised by operating on people's sensory, aesthetic and emotional responses – playing on their feelings as well as their thoughts" (ibid.: 42).

In Chapter 6 I explained how workers have responded to change in a way that I have described as resistance, because they developed ways of reducing the effect of corporate communications about the meaning of their work. I described the lack of accountability in the 'accountability culture' (as I call it), and how this workplace context has made people feel very insecure in their employment. Some writers suggest that resistance in the workplace has become very difficult under present day management systems. Ashforth and Mael (1998: 100) argue that when hierarchical

¹⁴⁹ Ackroyd and Thompson (1999: 20) and Wicks (1998) are critical of organisational researchers who insist that organisational structures should be shaped by the environments they operate in, leaving little role for individual agency.

¹⁵⁰ Simpson and Craig (1997) have said that AgResearch has adopted this strategy.

¹⁵¹ Bate (1998), a writer on organisational culture takes, on his own admission, a different perspective from most members of this school as he wishes to study organisational culture to understand it rather than to further its use to control workers.

control developed into technical, bureaucratic and normative controls, control became depersonalised as it was incorporated into the system and became accepted and unquestioned. This made it invisible. Under such a system, resistance is likely to “be more muted, sporadic, and diffuse”. This leads into a discussion of resistance. Is what I have observed ‘resistance’ as defined in the sociological literature? Why and what would workers be resisting?

7.3.2 Why resist normative control?

The development of systems of work control rest on the premise that workers will be motivated to resist (Ackroyd and Thompson, 1999; Clegg, 1994; Edwards, 1979). And, as May (1999: 6), using a reference to Foucault, suggests, there is a need to provide an “understanding of how to resist domination in everyday life”. Rose (1978[1975], 1988), though giving his books the title *Industrial Behaviour* (with different subtitles for each edition), relates his work more to systems of control of work than to the behaviour of the workers under these systems. The emphasis on ‘control’, however, has another side that could be interpreted as resistance. A system of control could be interpreted as a description of the way workers are believed to try to exert control over their work. For example, when in 1918, early psychologists decided to focus on worker fatigue as a reason for low productivity, it took till 1924 for Myers, the foremost researcher in this field, to discover that workers were recalcitrant because they found the work boring and monotonous and so tried to introduce variety in whatever way they could (Rose, 1978: 65-84). The emphasis on control of work implies that resisters must be very powerful. So much energy has been expended looking for ways to control workers!¹⁵²

If normative control is about management in organisations trying to control how employees make their work meaningful, then there are going to be times and places when employees have different meanings from others in their work organisation – both from other groups and from the organisation itself as promoted by its senior management. Whether or not workers resist will depend on how important those meanings are to them. As Ashforth and Mael (1998: 99) assert “because the

¹⁵² Nord and Jermier agree. “The heavy emphasis on overcoming resistance reflects an important assumption managerialist writers seem to hold. The writers appear to be assuming that those who resist are powerful actors (or could easily become so). If they are not powerful, why would so much attention be given to dealing with them?” (Nord and Jermier, 1994: 3).

individual is not a tabula rasa onto which the organization can simply inscribe an identity, ambivalence and resistance tend to result.” Rose (1988: 12) claims that some of the causes of resistance are surprising. Workers may simply not care about the economic interests of the employer. If the workers do see their interests differently they are more likely to resist the ways in which managers try to control “their effort and their ways of thinking”.

According to Ackroyd and Thompson (1999), resistance is a way of asserting autonomy and hence maintaining identity. Suppressed ‘misbehaviour’ will appear in another form. Hence, the literature suggests that resistance to normative control is likely because the norms imposed by management are likely to differ from those of workers, and because workers tend to seek control or autonomy over their work.

7.3.3 Is resistance to normative control possible?

Can some of the behaviour of workers that I have observed in AgResearch be called resistance? Is it possible for workers to act or are they overwhelmed by the organisational structures and management systems, and Government policy as implemented by FRST? Writers in the sociology of work are concerned about the lack of literature about resistance. The accounts given of the theoretical basis for the management of work (e.g., Grint, 1991; Rose, 1978, 1988; Littler, 1982b), have paid little attention to how workers adapted or resisted these regimes, suggesting that employers were successful in controlling and/or manipulating the ‘natural’ recalcitrance of workers. Indeed this lack of literature has been used to argue that even the New Wave Marxists were so overwhelmed by the success of capitalism that their works could be read as supporting it (Rose, 1988: 381). The power of normative control is asserted by contemporary writers: “The power of administrators to regulate action, thought, and feeling is institutionalized in systems of control that veil the use of power and confer a patina of legitimacy, thus making resistance appear unwarranted and ultimately hopeless” (Ashforth and Mael, 1998: 114).

The Board and senior management in AgResearch developed the organisational direction as communicated in the strategic plan, and presumed that workers would accept it. The CEO then implied, if AgResearch did not change quickly, it would not survive. According to Grint (1991: 131-2), managers act as if organisational culture

as expressed in a strategic plan actually exists. There is “a presumption that all organization members do, or should, share the aims attributed to organizational leaders” (Rose, 1978: 227-8). Other tactics are used to ‘encourage’ workers to buy in to company values. Any resistance or “tactical protests” can be seen by management as a luxury “in the face of the ... ‘imperatives’ of [organisational] survival: for example, the pursuit of efficiency, effectiveness and economy” (May, 1999: 9; Nilakant and Ramnarayan, 1998: 359). Schoenberger (1997) suggests that allusion to competition masks power relations at work. If workers refuse to accept this need for urgency they are “open to the charge of being ... out of touch with the necessities of a given reality, in whose name managers are positioned within the organizational field to speak” (May, 1999: 9-10).

Evidence for the strength of the belief in the dominant power of capital/employers is also seen in the lack of attention paid to resistance in the management literature. The Neo-Human Relations School saw resistance “in terms of the psychology of individual deviancy ... Such perspectives did not start from the reality of observed behaviour, but from a variety of preconceived starting points” (Ackroyd and Thompson, 1998: 18), which included human needs (Maslow, 1943) and behaviourist notions (Skinner, 1953; Homans, 1950). The Neo-Human Relations School assumed that a “compliant, programmable worker is possible” (Ackroyd and Thompson, 1999: 18). Most literature studied organisational behaviour in order to achieve greater control: “... that if something can be understood, it is manageable” (ibid.: 19). Clegg (1994, 1990) spends a lot more time writing on how organisations ‘outflank’ employees than on how employees resist. My conclusion, on reading some of the management literature, is that any problem with worker behaviour is regarded as a fault of management for not managing it properly. In this respect, later management theorists stand alongside F.W. Taylor. Other writers support this conclusion (e.g., Analoui and Kakabadse, 1993: 56-58; Rose, 1988: 11-12).¹⁵³ In

¹⁵³ E.g., “The message that managers have found most often in such accounts [frameworks of interpretation held by personnel] is that the interests of workers coincide, in the end, with those of the employer. In this perspective, any resistance or uncooperativeness by workers to being controlled is not just a danger to efficient production. It is also wrong headed: the reflection of a poor character (‘a bad attitude’) on the part of the worker; the outcome of his or her ‘stupidity’; or the sign of a ‘political’ motivation. Even when they say it results from ‘poor communication’, seemingly criticizing themselves for putting the management message across badly, they may actually be blaming workers for not understanding it” (Rose, 1988: 12).

spite of this, such resistant workers are portrayed as deviant or irrational (Rose, 1988: 11-12; Strebel, 1996: 86).

Other writers hope that by focusing on resistance it will become visible. Ackroyd and Thompson (1999) in the book *Organizational Misbehaviour*¹⁵⁴ attempt to persuade the reader that the workplace is no different from anywhere else. People ‘misbehave’ everywhere! In the past, “[m]uch employee action has been treated as a rehearsal for something else – social deviance, class struggle ...” but Ackroyd and Thompson (1999: 52) wish to present and understand “mis/behaviour on its own terms”. They point out that industrial relations, organisational or management theorists “have not sought to identify the extent of misbehaviour or to constitute it as a subject” (ibid.).¹⁵⁵ Hence, for Ackroyd and Thompson (1999: 47), absolute control can never be exercised over workers. The latter will always find ways around management.

Other writers also disagree about the power of normative control. In a study based on the finance industry in New Zealand, Austrin (1994) was sceptical about the emergence of self-disciplined workers (one of the goals of normative control according to Clegg (1994: 282)). Hassard et al. (2000: 8) assert “... there is invariably the possibility of slippage and resistance whenever employees experience corporate demands to transgress their embodied sense of self-identity”. As far as Bate (1998: 40) is concerned “it simply does not work!” He does not believe, even in times of uncertainty, that employees will buy-in to anything just because someone else thinks it is ‘a good thing’. Ashforth and Mael (1998: 94) draw attention to the relationship between the process by which control is used, in terms of its respect for individuals, and whether or not resistance occurs. It is argued that as insecurity of employment is becoming more endemic, workers are less likely to trust employers than they did in the past. It seems rather naïve, even irrational, of employers to expect loyalty from their workers when they cannot offer security in return. Employment relations are likely to become more calculative in this situation (ibid.: 106). Other writers, as indicated elsewhere, also direct attention to the importance of the organisational (as well as the national and international) context of work.

¹⁵⁴ In the book title the second word is italicised so that the title is ‘Organizational *Mis*Behaviour’.

¹⁵⁵ By making resistance a subject in its own right I fear that these authors risk objectifying it again by losing its personal and contextual nature.

Other situational contexts, apart from managerial systems of control, may be limiting workers' actions. Most writers do seek to find an analytical balance between the power of structures set up by organisations and environments, and a worker's ability to act (though some writers have a dislike of such a dualism, e.g., Knights and Willmott, 1989). Nonetheless, some contexts do exist in which the actions of workers are very limited. The dominance of structure over agency (and vice versa) may occur by degree, rather than absolutely (Law, 1994: 52-71). Davidson (1994) has depicted a situation in which, she argues, the state of the labour market has dominated any control workers may have had. Dent (1991) in his study of the medical profession in Britain, described the medical arena in terms of "competing strategies" between the profession and management, with these strategies being policy rather than management driven, but with similar objectives to those found in the private sector (ibid.: 84). He points out that the medical profession has had the power to modify and reinterpret management strategies to fit their concerns (ibid.: 83-4).

Similarly, the context of the labour market and its requirement for particular skills may limit a worker's actions. According to Littler (1982b: 7-11) there are two forms of the social construction of skill. The strong version says that skill is not dependent on job content but on the control of the supply, through employers' or workers' entry barriers. The weaker version has it that skill is recognized and rewarded only to the extent of the capacity of workers to define it as skill – a capacity which is derived from their "strategic position within the production process combined with collective organization" (ibid.: 9). The medical profession has had the power to both control supply and define their own strategic position within the health system. The science community in New Zealand does not appear to have either of these controls over the skills of its workers.¹⁵⁶ According to May (1999: 3), the argument about the meaning

¹⁵⁶ I think this aspect is also crucial to the argument about what is different now compared with both the period when AgResearch started and DSIR and MAF Tech before that. In the public sector in the past there was not this concern about control by management, particularly as interpreted and implemented by Human Resources practice. One of the consequences of restructuring the public sector in New Zealand was that more managers were required to ensure greater accountability and efficiency. In this restructuring, medical specialists have benefited (*The Press*, Saturday, 23 Feb, 2002) because of their power in the market place through the construction of private health insurance. Scientists do not have this bargaining power in spite of Government rhetoric about their important role in the knowledge economy. If R&D featured more strongly in New Zealand's industrial culture, this situation could change.

of work should be “centred on a continual struggle between resistance and power with due consideration being given to the elements of both agency and structure”.

Ackroyd and Thompson (1999: 47) mention the importance of Labour Process Theory (LPT) in the study of resistance in the workplace. I describe this branch of the sociology of work briefly in the next section.

7.3.4 Labour Process Theory (LPT)

The relevance of LPT is based on the dialectic between capital and labour, in which capital is trying to control labour in order to produce more profit, and which labour resists (Ackroyd and Thompson, 1999: 20, 47; Edwards, 1979; Smith and Thompson, 1999: 211). LPT developed from Braverman (1974) (Braverman, 1999; Grint, 1991: 184; Smith & Thompson, 1999) and traditionally has been centred on skill and control (Smith and Thompson, 1999: 207), and the division of labour. Its intellectual roots are firmly in a labour theory of value, although the domain of discussion has moved increasingly from economics to sociology, after neo-classicism usurped economics; these roots are sometimes forgotten.

The influence of Marxism is apparent in the many work studies, which until recent times, focused on the so-called working class with attention being paid to factory work and coalmining. At the time (early 1970s) workers in these industries went on strike for long periods. There was always the hope among Marxist supporters that such strikes actually were indicators of the revolution to come (Nord & Jermier, 1994: 3). The second wave of LPT (e.g., Edwards, 1979; Littler, 1982b) described a new labour process which was “not so attached to revolutionary ideas” and class. Writers thought that resistance was now against management and how it controlled work (Ackroyd and Thompson, 1999: 47). Ashforth and Mael (1998: 107-108), however, still see those who come from LPT and radical or critical theory perspectives as portraying the romantic notion of “the noble but downtrodden worker fighting valiantly against a system of oppression governed by greedy capitalists or impersonal bureaucracies (Braverman, 1974; Nichols and Beynon, 1977)”.¹⁵⁷ Knights and Morgan (1991a, b), Wilkinson, Godfrey & Marchington (1997), and

¹⁵⁷ Note that these authors do not cite more recent works even though this was published in 1998.

Ackroyd and Thompson (1999) do emphasise dominant power and how such power leads to oppression.

Smith and Thompson (1999: 209), writers from an LPT perspective, challenge the supposed move from “models of control to ones of commitment”. They say that the call for greater participation and increasing autonomy for the workforce is a pretty hollow one. “Even among professionals, self-regulation is increasingly giving way to regulation through external audits and assessment” (ibid.). Others have argued that work is intensifying in the drive for greater efficiency in an increasingly competitive environment, and that this intensification has been introduced into the public sector (Smith and Thompson, 1999: 208-9; Warhurst and Thompson, 1998).

Since the late 1980s, labour process theorists and researchers such as Knights, Collinson and Willmott have started taking the individual into their accounts, by focusing on subjectivity (e.g., Knights and Vurdabakis, 1994; Collinson, 1994; Willmott, 1993). Academics in this tradition are paying attention also to ‘white-collar’ work (e.g., Smith, Knights and Willmott, 1991). Their work is important to me because there is actually very little literature on resistance and its link to identity outside the tradition of ‘blue collar’ work.

May (1999: 2-3) makes the point that Braverman made labour an object rather than a subject. As editors of *Resistance and Power in Organizations: Agency, Subjectivity, and the Labour Process*, Jermier et al. (1994) indicate in their introduction, to better understand resistance in the workplace, researchers need to consider worker subjectivity. Wicks (1998:4) thinks that LPT is addressing the alienative effect of normative control type systems through its attention to subjectivity. He believes that in the absence of a “unifying class consciousness”, the way in which identity is formed and maintained and the conditions which allow “compliance and/or resistance to occur” is an important object/subject of study.

What does this expression, ‘subjectivity’, mean? How does it relate to the issue of identity? Clegg (1994) uses subjectivity to describe how a person or identity is acted on or constituted by power. Hence a subject is also the site of resistance. Clegg is particularly interested in how intervention by management can create

“accommodative and co-opted subjects but also ones who are resistant” (Clegg, 1994: 315). He develops two dimensions of the way authors constitute the resistant subject: a person’s awareness of themselves as a resistor and the way structures make a person into a resistor.

Smith and Thompson (1999: 214) claim that the “Knights and Willmott camp” (as they call those who have added ‘the subject’ to LPT) and other writers in the tradition of “radical scepticism” have focused on the “*nature* rather than *effectiveness* of new management practices” (ibid.: 212). Such writers believe these practices are so powerful that any dissent disappears. In their accounts Smith and Thompson (1999: 215) feel “the voice of labor is not accessed, but constituted within managerial discourse”. Smith and Thompson fear that the “subject of the action” is lost (ibid.) and go on to say that they would rather refocus on the competition between capital and labour (ibid.: 216).

Smith and Thompson demonstrate the importance of relating this study back to the restructuring of the public sector in New Zealand. However, I think they too also risk ‘losing the subject of action’ by seeing conflict as between two structural forces, capital and labour, neglecting an interpretive approach to workers’ actions. The worker, in their analysis, becomes invisible. By contrast to the ‘constituted subject’ of Knights and Willmott, or the invisible worker of Smith and Thompson, an interpretive approach leads to a consideration of how people make meaning and may resist such ‘forces’ in order to protect their identities.

Giddens, according to Knights and Vurdabakis (1994: 182), believes that people always have power to act, even if these actions are subject to particular boundaries and unanticipated consequences. He is concerned that in Foucault’s account “human beings do not make their own history but are swept along by it” (ibid.). Grint (1991: 132-3) arguing from a contingent, interpretive framework, sees cultures as a result of “social action”. People are not as they ‘should be’ but have their own power as ‘translators’ (Law, 1994:49) ‘interpreters’ (Grint, 1991; Blumer, 1967, 1969) and ‘negotiators’ (Strauss, 1978). What happens is contingent, dependent on the context.

The previous section has introduced the topic of self-identity through the focus of some LPT writers on subjectivity. I will now discuss what other writers have said about the link between identity and work, so important to this study.

7.3.5 Self-Identity and work

For Ricoeur (1994, cited in May, 1999: 9), self-identity is expressed as the answer to the question ‘who am I?’ Ackroyd and Thompson (1999: 27) assert the importance of the relationship of this answer to work:

This matter of identity at work is becoming more rather than less important ... The view of the employer and manager – that the employee will be willing to identify with their company – is no more nor less than a startling piece of wishful thinking.

Goldthorpe et al. (1970: 1-3), informed by Marxism but researching in the context of growing British prosperity in the 1950s and 1960s, sought to ‘test’ the thesis, widely accepted at the time, that with increasing affluence the working class were becoming part of the bourgeoisie. The authors carried out large studies of three industrial plants in Luton and developed theories about orientations to work. People seek work that fits their particular ideas about why they should work and what they wish to get from it (ibid.: 178-9). These ideas come from a worker’s own background and the impact of the society of the time. They are context related and do not have to do just with the work organisation. Indeed, one of the major contributions made by Goldthorpe and his “affluent worker” colleagues was to extend the study of work beyond the “factory gate”. (The Human Relations movement did not like this result because it placed workers’ orientations outside the domain of influence of the employer, so, according to Grint (1991: 126), played down its significance. I observe that the development of normative control has placed workers back ‘inside’ this domain.) Workers may also choose to enhance extrinsic or intrinsic rewards at the expense of the other, or may choose to enhance their economic rewards in order to seek other satisfactions in their “out-of-work lives” (Goldthorpe et al., 1970: 179). Goldthorpe et al. also wished to modify the psychological focus of the Human Relations and Neo-Human Relations movements, by asserting that the satisfactions people seek in their work are “culturally determined *variables*, not psychological constraints” (ibid.: 178) and hence are the focus of sociological rather than psychological study.

As I was analysing my first case study, the W&S Group, I became aware that identity was the big issue for those I was studying. It was only when I read Ashforth and Mael (1998) later, that I became aware that resistance and identity were linked in the literature. If workers feel that their identities are under challenge then it is likely that they will respond in some way that can be perceived to be resistance. Ashforth and Mael (1998: 90) argue that “acts of resistance are inherently *meaningful* to the actors and their peers. In particular, resistance is often prompted by a perceived threat to *identity*, to a valued conception of self”. Since then, I have found many other sources also making this link (e.g., Ackroyd and Thompson, 1999; Knights and Willmott, 1999; Smith and Thompson, 1999; Bate, 1998; du Gay, 1996; Casey, 1995). It was also implicit in earlier work, where identity was linked to class or occupations such as coal miner, or factory worker, and it was assumed that workers resisted because they were members of (had the identity of) the working class. (Goldthorpe et al. (1970: 40-41) called the orientation of such workers ‘solidaristic’.)

In AgResearch I observed that those workers whose lives have been centred on work as scientists seem to be most challenged by change. Ashforth and Mael (1998: 106) reviving (unknowingly) Simmel, discuss how life in contemporary society means that a person wears many different hats and so develops a facility for fitting into different situations as required, rather than be dominated by any one identity. “Furthermore, a multifaceted self has more internal resources for resisting external demands.” As companies demand more time of their employees or demonstrations of commitment by time spent at work, whether that time is efficiently used or not, employees may not have other ways of maintaining and reinforcing valued identities because they simply will not have time for alternative activities (Casey, 1995: 138-182; Coser, 1974).

For some workers, self-identity may be influenced more by their lives outside work, particularly how they spend their leisure (Iso-Ahola, 1989) and how they consume (du Gay, 1996). My focus is on identity and work but for many that connection relates to whether or not they have any leisure, and if they do, how it is related to their attitudes to work and to their identity, compared with those whose identities are dependent on work.

Identity is about belonging and it is also about difference. Durkheim believed that by belonging to society, the limitless aspirations of individuals could be curbed. Encouragement of individuals to be different, apart from the need for a division of labour, would result in “unregulated egoistic behaviour” (Clegg and Dunkerley, 1980: 27). The desire to belong and also to be different has been called “the paradox of identity” (after Smith and Berg, 1987, cited in Ashforth and Mael, 1998: 95). Collinson (1994) noted that much of the behaviour he observed was to do with ideas workers had about themselves and how these were reinforced by being different to other groups and especially to management. According to Collinson (1992), Thompson (1983), and Ashforth and Mael (1998), the development of an ‘us versus them’ mentality is a precursor to resistance.

Ashforth and Mael (1998: 97) contend that ambivalence about who you work for is normal and probably healthy. As Collinson writes (1994: 29): “Resistance frequently contains elements of consent and consent often incorporates aspects of resistance.” In other words, people like to think of themselves as individuals and simultaneously as members of certain social groups (Ashforth and Mael, 1998: 94-5). Within particular occupations, certain traits will be regarded as important, and that identity will become valued; then, as it is practised and recognised by others, it will come to be seen as part of a personal identity.

In my study I am interested in what happens to workers whose livelihood now depends on work in a competitive environment such as the FRST system for the public funding of scientific research and the emphasis on the ‘global market’. Knights and Willmott (1999: 82) argue that workers become constructed as self-interested individuals through such a system: “Marx’s analysis makes clear how individual self-interest is not an essential element in human existence. It is conditioned and sustained by the very workings of capitalism, the market and enlightenment conceptions of the autonomous individual.” For example, Goldthorpe et al. (1969: 165) link a growth in individualism with the increasing pay of a section of blue-collar workers. Knights and Morgan (1991b) reveal how life insurance sales people present clients with the choice of purchasing ‘security as a commodity’ rather than developing a “community of social relations” which could ensure their security (ibid.: 236). By studying the work of journalists, David Murphy (1991) demonstrated

that while they have strong unions, the need to 'sell' stories to an editor and meet the market demand for news forced journalists into individual competition with their colleagues. So, the need for bureaucratic control was reduced or eliminated and such workers became more active participants in capitalism.

Austrin (1994) promotes the view that human resource strategies such as the performance appraisal system, described by Clegg (1994: 315) as "a form of simultaneous interrogation and therapy", individualise work relationships and hence undermine the work of unions. Austrin suggests that unions should provide an arena in which workers can articulate their concerns and hear those of others, developing a collectivity.

These writers see capitalism as forcing people into individuality and competition with others rather than encouraging a collectivity of community. People make decisions in order to bring themselves individual benefit rather than benefit a group or society.¹⁵⁸ Giroux (2001) argues that capitalism has produced a society that fosters individualism at the expense of the common good.

How is individualisation different from autonomy? There is some conflict in the literature. There is an implication that normative control reduces autonomy while, as a hand-maiden of capitalism, it increases individualisation. It seems to me that autonomy is about having a free choice over 'how to be in society' whereas individualism is something that decreases the chances of acting cooperatively. Though neo-liberalism is based on a catch cry of providing 'more choice', this choice is about market choice and therefore about making meaning through consumption (du Gay, 1996). It could be that normative control is a way to manage individualistic workers so that they cast this individualism aside and conform at work for the sake of production and exercise their autonomy only within the bounds of their organisational culture, which to some writers, is not autonomy at all (Hassard et al., 2000: 8; Sturdy et al., 1992a: 5).

¹⁵⁸ This links to the notion of social capital and how the more developed a society the less social capital it is seen to have. In other words, there is less emphasis on social networks. (Ichiro Kawachi, Sociology Seminar at University of Canterbury, 3-8-01.)

I have discussed how many writers assert that resistance does occur in modern organisations and that frequently it can be seen as a response to the way in which normative control systems challenge identity and encourage individuality. I now go on to consider how others have described and interpreted what workers actually *do* or *do not* do in response to such a system of control. Identity is also something that may not be expressed by action, but by self-awareness, a secret activity (Cohen and Taylor, 1992).

7.4 Responses to normative control

Until I read the sociology of work literature I was unaware that normative control, as a system of work, existed. I had thought of systems of control as more visible and obvious, and I found it difficult to understand exactly what it was that scientific workers were unhappy about. By reading the literature I was made aware that workers were responding to the normative aspect of the systems of work control used by AgResearch corporate management. At first the implementation of the strategic plan was limited to its inclusion only in organisational policy. This in itself was sufficient to confuse many staff members as they wondered where they fitted and how they could contribute to this new description of the organisation in which they worked (Hunt, 2001). The Strategic Plan did not seem to apply to them and yet they were told that it did. For some, it was not that they did not want to conform to it. They just could not see how they could. It did not seem to describe the person they saw themselves as. For others there was a strong wish not to conform to this new vision.

May (1999) emphasises, like other writers (e.g., Rose, 1978, 1988), the importance of understanding how the ‘local level’ or context affects the “variability and indeterminacy” (May, 1999: 13) or “contingency” (Grint, 1991) of the response of workers and their work organisation in ‘spaces of discretion’, or situations in which workers have choice. For instance, in AgResearch one could observe an overall effect of change on workers’ sense of insecurity, as well as a response to the particularities of this change. As Knights and Willmott (1999: 77) so aptly express it:

Our sense of self is endangered by situations where we perceive ourselves to be vulnerable to social or interpersonal rejection or denial human beings interpret every situation through a self-conscious perception of what it means for symbolic, as well as material, security.

This section covers the possible responses of workers to a system of normative control ranging from active commitment to corporate values, to compliance, to resistance, followed by a discussion of different models of responses to work control taken from the literature. The section concludes with some thoughts on what is effective resistance.

7.4.1 Commitment – active embracing of corporate values

I have come across very little in the sociology of work and management literature on workers' commitment to change. It would seem that a lot of the management directed literature is about how to manage change (e.g., Huber & Glick, 1993), getting workers to change (e.g., Eisler, 1995; Gustafson & Reger, 1995; Larkin & Larkin, 1996), and why management fails (e.g., Kotter, 1995; Moore & Spector, 1995; MacLeod, 1993). Much of the sociologically based literature is about resistance to change (e.g., Jermier et al., 1994; Ashforth and Mael, 1998) or how work is changing, but not about the nature of the reaction to this change (e.g., Knights & Willmott, 2000; Beck, 2000; Thompson & Warhurst, 1998). Commitment and engagement of workers implies that management and 'work' have successfully appropriated the identity of workers (Ackroyd and Thompson, 1999: 25; Casey, 1995). As I have mentioned earlier, the assumption of most of the literature is that systems of work control have become so powerful that workers will submit to them and become committed to their work and their employer.

Other words used in the literature on work that could be related to commitment are those of 'manufacturing of consent' in which the informal nature of competition between workers (such as playing games during breaks) is seen as subtly changing workers to fit the capitalist system. Burawoy (1979) interpreted Roy's (1973) 'banana time' behaviour in this fashion.¹⁵⁹ I consider, however, that this behaviour is open to many other interpretations. It could be seen as a playing out of an acceptance, or a reinforcement of the system and rules of work control. This behaviour was also a measure of status within the working group and of self-identity,

¹⁵⁹ *Contemporary Sociology*, a journal usually reserved for book reviews, recently (September, 2001) devoted its opening pages to several authors, including Burawoy (2001), in order to consider the impact of his idea on their own lives and work.

as Roy himself said (Roy, 1973: 218-19). ‘Manufacturing consent’ could be used to describe any manipulation of workers on the job which encourages them to unwittingly align themselves to organisational goals and requirements. (In this light it could be seen as a form of normative control.)¹⁶⁰ Efforts by management to get employees ‘on side’ or ‘buying-in’ to corporate/Board inspired strategic directions, by using methods espoused by management gurus¹⁶¹ (e.g., Andrews & Herschel, 1996; Kotter, 1995; Larkin & Larkin, 1996; Leonard & Straus, 1998; Quinn, Anderson, & Finkelstein, 1998; Senge, 1990; Strebel, 1996; Tichy & Charan, 1995), also smack of ‘manufacturing consent’. Such methods could also be described as ways in which employers are able to ‘outflank’ employees (Clegg, 1994). Sturdy et al. (1992a: 6) are critical of Burawoy. They say he places too much emphasis on hegemony and consent, neglects “the significance and persistence of resistance” and marginalizes “the influence of ‘external’ factors – such as culture, race and gender, and social institutions (e.g., school, media, family) ...”. Sturdy et al. (1992a) see individual workers as ‘susceptible’ to discipline but that they too can exercise power through skill and control.

Whatever resistance was happening in AgResearch was happening in such a way that work continued, meaning workers must have developed ways of complying.

7.4.2 Compliance

Resistance, compliance and consent were simultaneously embedded in a shifting combination of contradictions, ambiguities and unresolved paradoxes and tensions ... (Collinson, 1994: 38).

Compliance is universal, existing in all social units. It is a major element of the relationship between those who have power and those over whom they exercise it (Etzioni, 1969: 59).¹⁶²

¹⁶⁰ My work in the Strategic Planning Implementation Network or Green to Gold Network, as it became named, could be seen in this light. It is only as I now reflect on the lack of enthusiasm of scientific staff for it that I realise my naïvety!

¹⁶¹ The titles of some of these are quite revealing: *Organizational Communication: Empowerment in a Technological Society* (Andrews & Herschel, 1996); *Putting your company's whole brain to work* (Leonard and Straus, 1998); *Managing Professionals' Intellect: Making the most of the best* (Quinn et al., 1998); *Why do employees resist?* (Strebel, 1996); *The CEO as Coach* (Tichy & Charan, 1995).

¹⁶² Etzioni references this understanding to an article by Simmel in an 1896 issue of the *American Journal of Sociology*.

Most accounts and theorising about resistance imply that workers do not resist to the extent of demonstrating their resistance by ‘exiting’ (Hirschman, 1970). This must mean that the forms of resistance and control documented and pondered over by many writers have been reasonably successful in getting a compliant, if not committed, workforce. Edwards (1986: 7) has been described by Ackroyd and Thompson (1999: 49) as moving away from a “ ‘control and resistance’ model to one that recognises a variety of forms of ‘conflict and accommodation’ ”. The word ‘accommodation’ implies a bit of give and take, and is a good description of how the behaviour of each ‘side’ allows work to continue.

Foner (1993) studied work in a nursing home. She cites Benson (1986: 228) to define work culture as “the ideology and practice with which workers stake out a relatively autonomous sphere of action on the job”, with an emphasis on how “employees distance themselves from the impact of formal authority structures as they confront the limitations and exploit the possibilities of their jobs” (Foner, 1993: 2). This work culture has a dual character for Foner. It provides adaptive and coping strategies and generates resistance. From her perspective, Roy’s (1973) description of ‘banana time’ is an example of adaptation. The “informal practices and customs” the nurse-aids developed made them happier and often benefited patients (Foner, 1993: 2). The development of this work culture and the resistance to formal structures demonstrated within it showed how the workers were “not passive players” but “active agents” (ibid.: 9). Bate (1998: 41-2) also discusses how workers develop their own subcultures in order to resist.

The literature asserts that compliance is related to an exchange relationship. Kelman (1958, cited in Wicks, 1998: 4) developed a typology which shows how individuals’ attitudes to change can be influenced in three different ways: by

- 1) “compliance or exchange ... compliance occurs only to gain specific rewards, an exchange of individual behaviour for material or psychological benefit”;
- 2) “identification or affiliation ... satisfaction of needs for affiliation ...”; or
- 3) “internalization or value congruence ... congruence between individual and organizational values ...”.

Kelman’s framework implies that people are open to manipulation by others. If, for example, an organisation can set up work that people want to do and which gives

them good rewards (of whatever nature), then they will comply because of the benefits they get. The relationship is only seen in terms of exchange (like *homo economicus* or 'rational' man theory (Grint, 1991: 123)). Similarly, one of the rewards could be providing workers with a place where they belong (Human Relations Theory). In other words, the second description could be incorporated into the first as one of the pay-offs. The third description is not about being influenced at all because there is no need. The workers already match with the organisation or the organisation has aligned itself with the values of its workers. This situation takes the focus away from power implying, erroneously, that the exchange is negotiated, free and between equals. Willmott (1993: 537) also links compliance and exchange.

Instead of a deep identification with corporate values, there can be selective, calculative compliance. In which case, employee behaviour is (minimally) congruent with 'realizing' the values of the corporation, but only insofar as it is calculated that material and/or symbolic advantage can be gained from managing the appearance of consent.

Wicks (1998) develops a different approach to control and resistance in organisations by considering an agency and constraint perspective in which compliance and resistance are responses to structural conditions which are also shaped by these responses (with reference to Giddens, 1989: 25). Compliance is very important because without it organisations could not exist. In fact Etzioni (1969[1961]) considers that the degree of compliance in an organisation is a measure of organisational effectiveness. He suggested that compliance relationships can be seen in three ways. Management have: coercive power, which leads to subordinates experience of alienation; remunerative power, which leads to subordinates having a "calculative" involvement/interest in the organisation; and normative power, which leads to subordinates having a moral involvement. (Wicks, in discussing Etzioni's framework, does not mention how workers comply in this framework or what constitutes compliance as compared with other types of response.)

Knights and Willmott (1999: 80-81) link identity and autonomy to resistance and compliance. They consider that employees respond by "distancing themselves mentally" when their sense of autonomy is threatened by managerial control and that this resistance is not noticed because it is "concealed in acts of compliance" (ibid.: 80). Organisations have responded by setting up ways of obtaining employees'

‘commitment’ to organisational goals, implying that organisational management want more than compliance.

It is noticeable that in discussing compliance there is frequent reference made in the literature to four key, interlinked elements: resistance, identity and autonomy, distancing, and the notion that workers are able to comply only because they develop forms of resistance. I will attempt to describe and discuss these concepts within the limitation of the linear nature of writing. Note that this ordering and linking is my construction and not modelled on anyone else’s work.

7.4.3 The nature of resistance

Resistance is defined by Ashforth and Mael (1998: 90) as:

... intentional acts of commission or omission that defy the wishes of others. The term *intentional* signifies that one’s motive is central to the dynamics of resistance but does not mean that resistance is necessarily premeditated or rational ... The notion of resistance implies opposition *against* something, usually the exercise of power – the attempt to influence or control the resister. It is somewhat arbitrary, however, to label one behavior an act of power or control and another as an act of resistance power and resistance are embedded in a dynamic relationship that tends to be mutually reinforcing ... Acts of control are usually intended to create and maintain the conditions of employment and to craft meaning for organizational members ... Conversely, employee responses that are intended to oppose these acts are referred to as resistance.

The negative view of resistance as something to be overcome in the workplace is linked, according to Nord and Jermier (1994: 2-3), to the use of the word in psychoanalytic theory in which resistance was seen as a denial of reality (as perceived by the therapist). On the other hand, resistance could be a way an individual is protecting themselves from something that could harm them, and so it could be perceived as positive. Klein (1976), the only proponent I came across of the latter view, suggests that it is important to understand resistance as a natural part of change, because it is a response of people who may be experiencing “frustrations and [a] sense of helpless rage which these followers feel but usually cannot express” that may be voiced by just one person who may be seen by management as a “demagogue” or “rabble rouser” (ibid.: 122). It is important for organisations to take notice of such individuals as they may be articulating the views of many. As far as Nord and Jermier are concerned, resistance should really be treated as a neutral concept.

The idea of organisational misbehaviour as outlined by Ackroyd and Thompson (1999) is a fascinating and useful one. They wish to adopt Sprouse's (1992: 3) working definition of misbehaviour as "anything you do at work you are not supposed to do". Ackroyd and Thompson also point out that although it is those in power who decide what misbehaviour is (Ackroyd and Thompson, 1999: 3), it can also occur at the management level and is not just confined to workers, though this may appear to be so because they are the ones under greater scrutiny. As I have discussed in an earlier work (Hunt, 2001), when an organisation produces a strategic plan it then has a document which says what it wants its workers to be like, and if they do not conform then they do not fit. In fact, if workers behave in a way which knowingly does not match this document, then according to Ackroyd and Thompson they could be said to be 'misbehaving'.¹⁶³ Ackroyd and Thompson (1999: 7) argue "that the pursuit of autonomy (which is, from the managerial point of view, for the most part irresponsible), is the basis of organizational misbehaviour." In other words, misbehaviour has a contingent nature and is context related. In contrast to Ackroyd and Thompson's definition, I suggest that misbehaviour could be defined by those doing the misbehaving. If you see yourself as a cynic and a resistor, then this also is how you define your behaviour, management's inattention to it notwithstanding. Clegg (1994: 296-7) reinforces this idea that self-consciousness has to be part of a worker's self-awareness for certain behaviour to be called resistance.

Ashforth and Mael (1998: 92) emphasise "the power of resistance lies at least partly in its potential to contest *meaning*, specifically the definition of the individual derived from organizational membership".

Resistance can take the form of direct action or it can be indirect and embedded in other behaviour. This makes it difficult to distinguish. As Collinson (1994) indicates, in many cases resistance contains elements of consent and vice versa. It can serve several purposes simultaneously, the main one of which may be symbolic. Such symbolic acts "can express the oppositional side of one's ambivalence and thereby preserve the integrity of those valued social and personal identities that do not align with the prescribed organizational identity" (Ashforth and Mael, 1998: 101-2). The

¹⁶³ I was not familiar with Ackroyd and Thompson's work when I wrote this paper.

fact that someone resists can be of far more importance than what happens as a result of such resistance. Cohen and Taylor (1992) are clear that self-awareness is something we usually keep secret from others, but it allows us to maintain our own identities without ‘rocking the boat’ or actually acting it out. There is no simple delineation which allows one to make assumptions about what particular purpose certain behaviour is serving. Ackroyd and Thompson (1999: 51) discuss whether the particular behaviour of women workers described by Pollert (1981) could be called resistance because “they did give gentle nudges to authority, without in any way denting the structure of control (Pollert, 1981: 154)”. At the same time, this group of workers was oppressed and colluded with patriarchal ideals. Working relationships are complex, and often workers will achieve what management wants but not in the way that management wants them to (e.g. Hodson, 1991: 62-3). These examples provide other ways of considering acts of resistance.

As direct action was not behaviour considered by AgResearch workers, I will explore it only briefly here. An implication in most industrial sociology literature is that if resistance is not about direct action, usually in the form of strike action, then it is not ‘proper’ resistance (Nord and Jermier, 1994). Karlsson (1995, citing Therborn, 1986: 123)¹⁶⁴ implies that it is only when professionals come to see themselves as employees that they go on strike. He uses nurses and teachers as examples. There is a perception among professionals that going on strike degrades a professional’s status, as demonstrated by public reaction and explanations given by professionals such as teachers, nurses, junior doctors and university lecturers about why they are striking. It also implies that for resistance to become overt, professional workers need to see themselves in a different light – as part of the capitalist scheme of things where workers are pitted against employers, labour versus capital.

7.4.4 Typologies of resistance

I have selected five attempts to develop typologies of resistance or ways of classifying worker behaviour: Hodson (1995b); Clegg (1994); Ashforth and Mael (1998); Ackroyd and Thompson (1999); and Collinson (1994). These frameworks

¹⁶⁴ Karlsson is using Therborn to argue against Claus Offe (1985: 129-150) who suggests, according to Karlsson (1995: 4-5) that “work is not – and should not be – a key concept in sociological analysis” because “work has lost its important place in people’s biography”. Volkerling (1995) supports Offe’s views in relation to New Zealanders.

have been useful because they gave me some new material from which to further develop my analysis and also because they led to fruitful disagreements and areas for debate as my observations initiated different ways of considering resistance from those provided in the literature. The descriptions which follow are partial because I mention only concepts which resonate with my observations.

7.4.4.1 Hodson's basic agendas of resistance

Hodson (1995b) wants to give resistance a greater place in theoretical models on the workplace.¹⁶⁵ He has devised what he calls four “basic agendas of resistance: deflecting abuse, regulating the amount and intensity of work, defending autonomy and expanding worker control through worker participation schemes” (ibid.: 79). (For a simplified schematic diagram see Figure 7.1.) Hodson ties each of these in with four systems of work control as being the most likely typical forms of resistance under such regimes: direct control, technical control (e.g., Taylorism), bureaucratic control, and modern participative ways of organising work.

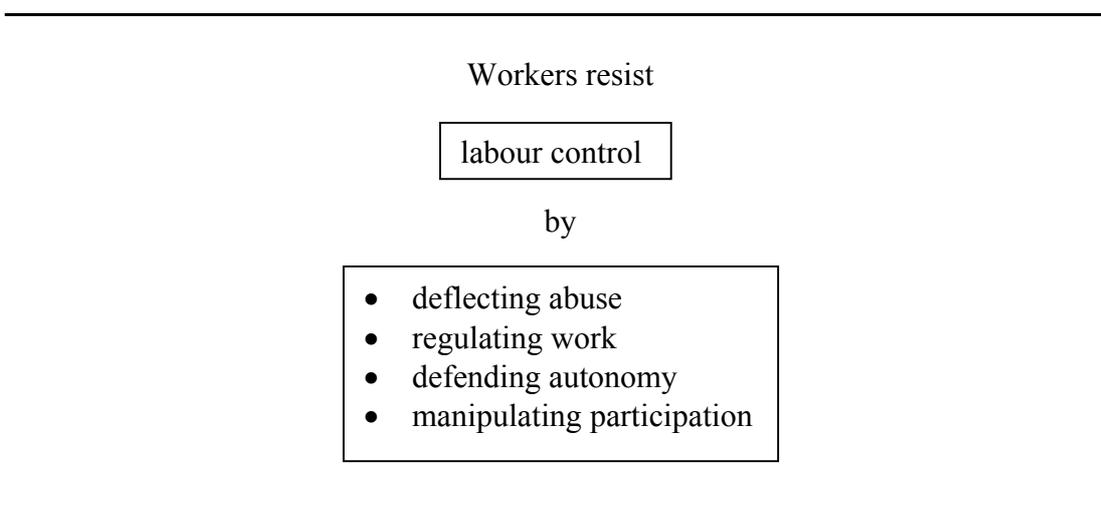


Figure 7.1 Hodson's conceptual model of worker resistance (1995b)

Within each ‘agenda of resistance’ Hodson develops different ‘categories’. For example, the ‘alternative value systems’ category within the ‘deflecting abuse’ agenda is described as a symbolic rejection of “the definition of the situation provided by those in power” (ibid.: 84). Such efforts to “delegitimate management”

¹⁶⁵ According to Hodson in his book review (1995a) of Jermier et al. (1994) the “British industrial sociologists are way ahead of the American ones on the topic of workplace resistance ...”.

are considered to be a “first crucial step in worker resistance”¹⁶⁶ and such “meanings require social affirmation for their continued vitality” (ibid.). Crozier (1964: 150) further developed March and Simon’s idea of ‘bounded rationality’¹⁶⁷ as he saw there were factors in the workplace that limited rationality. That is, different groups in the workplace could have ‘rationalities’ that worked for them but made no sense outside of the group.

Another category in Hodson’s agenda of ‘deflecting abuse’ is ‘degradation’. Hodson’s writing is not clear – he wavers between the control of work and resistance/responses to it in his categorisations. In this instance he uses a quote to illustrate ‘degradation’ but does not describe what workers *did* about it – how they deflected the abuse. Rather he describes how the workers felt – they just did not like it. His final agenda of ‘worker participation’ is a system of work control rather than resistance, as he describes it.

Hodson (1995: 95) sees autonomy as being protected when workers take pride in their work and that this is a form of resistance. Workers do this in spite of organisational control. They make personal choices about how much work they will do, rather than being management driven. This is interesting because Hodson is presumably stating that actions which reinforce and maintain a sense of autonomy are resistance. Ackroyd and Thompson (1999) say that the main reason people ‘misbehave’ is to protect and assert their autonomy, but they do not consider any ‘positive’ behaviour in this light.¹⁶⁸

Hodson’s association of particular forms of resistance with particular forms of control is not robust because there are examples of each of the agendas of resistance within AgResearch. This says either that AgResearch management contains aspects of all forms of control and is not particularly focused and/or Hodson’s proposed

¹⁶⁶ Gouldner, 1954; Nichols and Beynon, 1977: 137; Tilly, 1978.

¹⁶⁷ Rose (1988: 370) implies that this idea of ‘bounded rationality’ comes from Crozier, but Crozier indicates the source to be March and Simon’s (1958) book *Organizations*. This probably demonstrates that Rose was not familiar with Crozier’s work.

¹⁶⁸ I use the word ‘positive’ to describe behaviour which could be seen from one perspective as compliance or identification with company values. Ackroyd and Thompson (1999) are concerned with negative behaviour – behaviour that will not increase production or make more profit for the ‘owners’/capital.

typology is not tight enough. Admittedly Hodson (1995b: 102) does not say that each agenda is exclusive but there is an implication that particular forms of control are associated with particular forms of resistance, or even that the former causes the latter. Hodson has four forms of control which are related to supervision structure and work organisation (two of Rose's themes). He has nothing related to normative control type systems (except perhaps participative systems), even though the responses to such control can be seen in some of his categories of his 'basic agendas of resistance'. His typology has been useful in giving validity to forms of resistance I have observed (see Chapter 8), even though he has not linked them specifically to normative control. I suspect that resistance is also linked to the degree of power exercised by those in control, as well as its nature.¹⁶⁹

7.4.4.2 Clegg's strategies of outflanking

Clegg (1994) suggests that before a person can become a resistant subject they must first pass through a development of consciousness or awareness of the need for resistance. This requires an explanation of "resistance as a form of power ... in its absence, or at least its minimization" (ibid.: 289), which he calls 'strategies of outflanking', the strategies employers can use to overcome resistance or the potential for resistance (see Figure 7.2). This concept serves to enhance my descriptions of the actions of AgResearch's scientific workers but in the opposite way to Clegg's intention. This outflanking' can work both ways, as the *subjects* of the power (e.g., workers) could be outflanking those *with* the power (e.g., employers).¹⁷⁰

Clegg's first description within this concept is simply 'ignorance'. Ignorance can both facilitate or restrict power depending on the context (Clegg, 1994: 289). People may simply not be aware that there is an alternative way of seeing something or that networks and ways of linking with people both organisationally or nationally to support their resistance do exist. Clegg sees any resistance that is uncoordinated as likely to be "easily dealt with by defeat, exile or incorporation" (ibid.: 290). Another way of viewing why people may be ignorant is simple isolation – one sees oneself as subject to certain misfortunes say, but does not see the wider context into which

¹⁶⁹ See Clegg next, in this regard.

¹⁷⁰ Bauman's (1998: 33-34) description of Crozier's (1964) work as being about how power is gained by those groups who manage to make other groups insecure or uncertain, particularly in state bureaucracies, could also be describing a strategy of outflanking.

these may fit, and how they might be connected (ibid.).¹⁷¹ As I see it, ignorance can also work as a protective mechanism and a form of resistance, which enables workers to protect themselves from organisational claims on their identities.

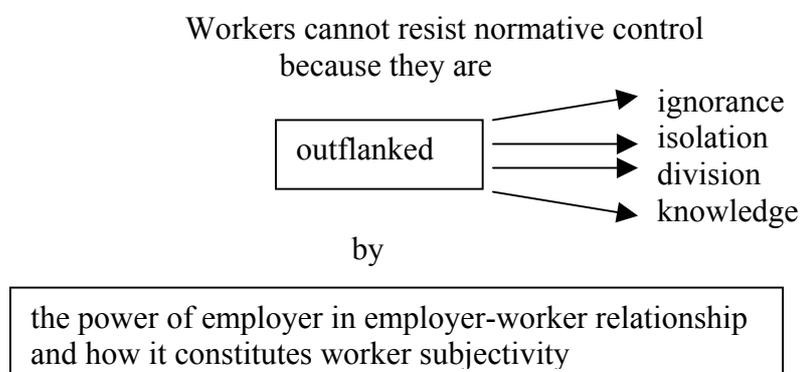


Figure 7.2 Clegg's model of how organisation's outflank resistance (1994)

In *Men and Women of the Corporation*, Kanter (1977) presents an argument that in times of stress or organisational change, workers make a choice between 'visibility' and 'non-visibility' as a way to survive. It has been suggested elsewhere that women and minority racial groups have made themselves invisible so that they will not be noticed and so will not be picked on.¹⁷² There is a risk to invisibility. Suchman (1999) gives an excellent example of work in a law firm where those at the top of the work hierarchy try to remove those employees whose work is invisible to them. Those at the top, however, do not know the value of the work of such employees.

Another way of thinking of invisibility is that silence may also be indicative of having no language to articulate what the problem is. The so-called, 'objective' nature of science and the male dominance of science (Harding, 1992; Fox, 1995; Keller, 1990, 1991, 1992, 1995; Kirkup & Keller, 1992; Schiebinger, 1989, 1994, 1999; Zuckerman, Cole & Bruer, 1991), and particularly the male dominance in organisations like AgResearch with its agricultural and scientific emphasis,¹⁷³ do not

¹⁷¹ Which is what the feminist consciousness-raising of the 1970s was about.

¹⁷² E.g., *Fat is a Feminist Issue* (Orbach, 1988[1978]) and *Women's Reality: An Emerging Female System in a White Male Society* (Schaeff, 1985[1981]).

¹⁷³ Agriculture and science have been particularly male domains in New Zealand.

provide an environment with a language in which emotions and feelings can be expressed.¹⁷⁴

Clegg (1994: 291) posits that “a step further from isolation is division” in which one has one’s life compartmentalised in such a way that what goes on in one area stays unrelated to the rest. He makes a claim, important to this thesis, that the development of instrumentalism could be a form of resistance:

The individual’s self-organization may be constructed in terms of divided life-worlds in which one manages the trials and tribulations of relative powerlessness in one sphere by hermetically sealing experience in situational specificity. Subject compartmentalization into segmented and thus psychically protected spheres is a form of resistance in itself, as witness the ‘instrumental’ worker (Goldthorpe et al., 1969) (ibid.).¹⁷⁵

Clegg also describes how organisations can ‘outflank’ resistance by the way in which they are structured to minimise the chances for alliances to occur (ibid.: 291-2).^{176 177}

It is difficult to make conscious and unconscious exercises of power and resistance visible. As Clegg (1994: 295) says, “... one should acknowledge that nonetheless people can exercise power without knowing that they are doing so ...”. Clegg implies that the only effective forms of resistance are those that are beyond mere “reflexive self-organization”,¹⁷⁸ but that this form needs to be present for more formal methods of resistance to occur. I suggest that even where an employer is ‘outflanking’ employees, this does not mean that there is no resistance. Collinson (1994: 59) criticises Clegg for his lack of mention of resistance in his book *Modern Organizations* (Clegg, 1990), his emphasis on outflanking at the expense of resistance in his book *Frameworks of Power* (Clegg, 1989), and the implications this lack of treatment has for the view that management practices are so powerful that resistance to them is unlikely. However, as Clegg (1994: 293) makes clear, a worker

¹⁷⁴ At a Sociology Department of the University of Canterbury seminar (10-5-02), *The interchange: A foundation for ethno-economics*, Richard Dawson claimed that the discourse and discipline of economics dominating the world today, has no language for the discussion of values and morality.

¹⁷⁵ It is worth noting here that though Clegg uses outflanking to describe what employers do, this reference cannot apply to employers, only employees.

¹⁷⁶ I do not want to say that organisations are structured in this way for the specific purpose of minimising chances for organising resistance, which is Clegg’s implication. It may be quite an unintended consequence.

¹⁷⁷ This is consistent with Austrin (1994). See Section 7.3.3.

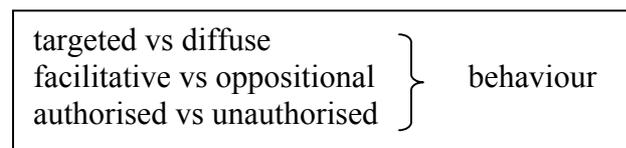
¹⁷⁸ ‘Self-organization’ is also the word Hodson and Ackroyd and Thompson use. It is not referenced and seems to be common usage, and linked to autonomy and the power of agency.

may know they are exploited, but the other things that make up their identity and meaning (e.g., having work) may be more important than addressing such exploitation: “such techniques of power may easily discipline the blithest of theoretically free spirits when the conditions of that freedom become evident.”

7.4.4.3 Ashforth and Maels’ three bipolar dimensions

Ashforth and Mael (1998: 99-101) have also offered a framework for resistance. They have “three bipolar dimensions”: targeted versus diffuse resistance, facilitative versus oppositional resistance, and authorized versus unauthorized resistance. I did not find this useful because the actual behaviour I observed could not be separated in this way. However, their thesis that resistance occurs to ‘sustain valued identities’ has become one of the most important concepts in developing my work.

Workers resist normative control
by



to

sustain valued identities

Figure 7.3 Ashforth and Maels’ model of resistance (1998)

7.4.4.4 Ackroyd and Thompsons’ dimensions of misbehaviour

Ackroyd and Thompson (1999: 25-28) have set up a model involving two axes as ‘dimensions of misbehaviour’. The horizontal axis covers four nominal, but not exclusive, areas of contention (“four directions that misbehaviour can take”) to do with disagreement over the appropriation of time, work, product (materials used in the work – not ‘end product’) and identity, with the appropriation of identity being fundamental to all other forms of misbehaviour. The authors define this as the “disagreement ... over the extent to which employees identify with their work activity and employers” (ibid.: 25). I have some problems with these concepts

because resistance could occur with the full commitment of the employee to time, work and product, but this commitment may not necessarily be to the employer but to the work for its own sake. In other words, appropriation of identity by employers and appropriation of identity by work need to be kept separate. The vertical axis is of an ordinal nature, covering the intensity of disagreement to a work task from positive commitment, engagement, cooperation, compliance, withdrawal, denial to hostility.

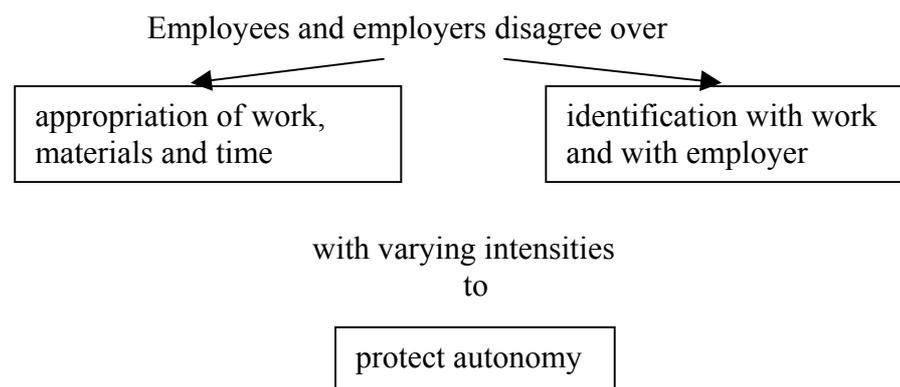


Figure 7.4 Ackroyd and Thompsons' dimensions of misbehaviour (1999)

I have a conceptual difficulty with this framework. It can be made clear by considering it as an hypothesis and its alternative hypothesis:

- If employees resist the appropriation of identity by their employers then employees will appropriate time, work and/or product due to the employer, in order to protect their autonomy and identity.
- If employees do not resist the appropriation of identity by their employers then employees will appropriate time, work and/or product, in order to do the work of the employer.

How does one tell if the workers are resisting or not? There has to be other behaviours linked to the resistance. For Ackroyd and Thompson it was clear from what the employees did when they appropriated time, work and product (e.g., theft/pilfering, sabotage, wasting time, work limitation, absenteeism) that they were resisting and not carrying out the work of the employer. What if the workers are appropriating time, work and product primarily for their own self-interest, not the interest of the employer while still doing the work of the employer, as was the case in

AgResearch? Ackroyd and Thompsons' framework has not, in my view, been consistently thought through in the light of empirical examples.

These difficulties notwithstanding, the concept of appropriation, particularly the appropriation of identity, is very useful because it suggests the idea of identity as a space that is being claimed inappropriately by an employer. This is of interest to me and matches the assertion of other authors who have suggested that normative control makes claims on identity (e.g., Ashforth and Mael, 1998: 113). The response to inappropriate claims on identity is likely to be protection of that identity and resistance to such claims, which leads into a discussion of the final model.

7.4.5 Protection of self-identity and autonomy

... we find ourselves searching for, or striving to protect, a valued set of meanings ... that makes us feel wanted, superior or seems somehow to transcend the ephemeral character of such ambitions [coveted positions in organizations and society, pursuit of material and symbolic indicators of success etc.]. This requires us routinely and recurrently to contrive ways of neutralizing or eliminating eventualities that pose a threat to these meanings and thus of the sense of self-identity derived from them (Knights and Willmott, 1999: 83-4).

The final model of resistance involves the concept of “distancing” as a way in which workers make the claims of employers less effective. This requires a preamble to cover some relevant literature on the role resistance plays in identity. The subsection concludes by considering some examples demonstrating that when work is related to a valued identity, workers may do more work rather than less as a form of resistance.

What is it that workers are exchanging for compliance? A strong case is that they are protecting their self-identities – the way that they see themselves that is important to them. “Interests and identities are not opposites. They reciprocally and discursively form one another this combination of ‘self’-interest and ‘self’-identity is the bedrock of employee action in the workplace” (Ackroyd and Thompson, 1999: 55). As I see it, the protection of identity is essentially an exercise in self-interest. The consequences of such action are not likely to result in structural change, but rather in accommodation to what is happening. The aim is not to change the organisation or society. It is to survive with one’s feelings about oneself still positive. If these feelings include still having a job in an insecure environment, then it makes no point to put this survival at risk.

7.4.5.1 Assertions of identity

Cohen and Taylor (1992) link resistance to the establishment and maintenance of identity in their book *Escape Attempts: The Theory and Practice of Resistance to Everyday Life*. The authors reflect on how, through our propensity for self-consciousness, we can manage our lives by using distancing tactics (ibid.: 52-59). Collinson (1994: 25) transfers this thinking to the workplace to explain how “resistance through distance describes the way in which subordinates try to escape or avoid the demands of authority and to ‘distance’ themselves, either physically and/or symbolically, from the organization and its prevailing power structure”. (See Figure 7.5.) In the resistance models I outlined earlier, Hodson’s categories within

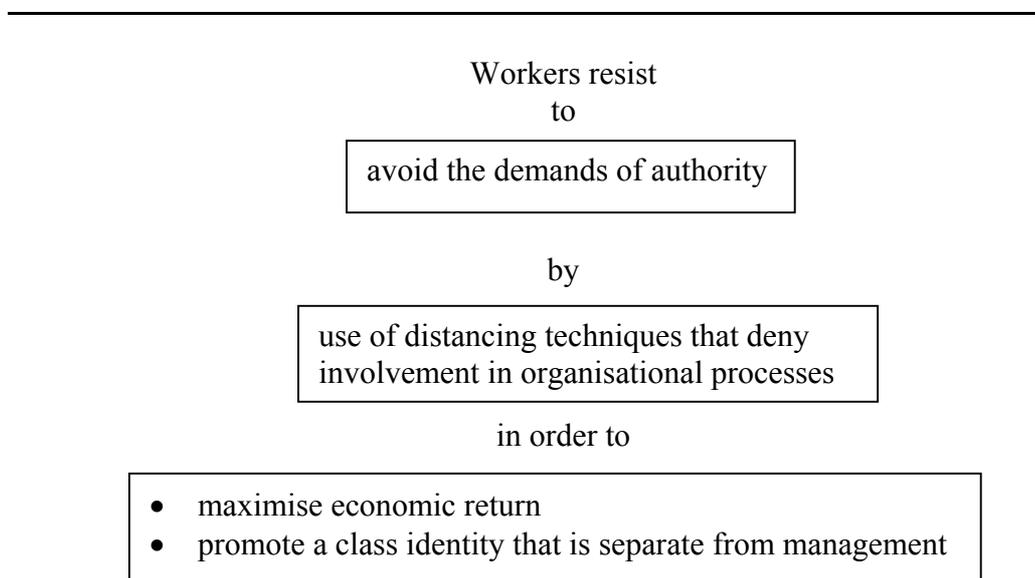


Figure 7.5: Collinson’s distancing model for resistance (1994)

the ‘deflecting abuse’ and ‘defending autonomy’ agendas, and Clegg’s ‘outflanking’, describe different distancing tactics. Willmott uses Berger and Luckmanns’ (1966) concept of ‘cool alternation’ and Goffman’s (1959, 1961b) ideas about role playing to describe how “the modern individual contrives to enjoy the material and symbolic benefits of occupying the role without feeling that his/her identity is defined by it” (Willmott, 1993: 537).

If we can make these mental journeys above the petty arrangements of work, marriage and leisure, what need have we to physically distance ourselves from them? We need not change the patterns, but only the way we think about them (Cohen and Taylor, 1992: 53).

As Simmel (1971: 335) said, “For only whoever stands outside his boundary in some sense knows that he stands within it, that is, knows it as a boundary.” This ability gives us a feeling of importance (Cohen and Taylor, 1992: 56).

Terry Austrin suggested to me that the expression ‘cynical traders’ described what was happening to scientific workers in AgResearch.¹⁷⁹ This expression implies that scientists are calculatingly trading some aspect of themselves in order to play the system to fund their science. It indicates that by acting in the way they do, workers are selling their integrity in order to continue their work.¹⁸⁰ Cohen and Taylor (1992: 55) explain that the methods we use to set ourselves apart from reality in order to observe it from a distance, take different forms, such as sarcasm, irony or cynicism. Self-conscious distancing is probably a survival mechanism that also serves other purposes (ibid), such as protection from emotion, which may also be a characteristic of many male scientists (Fox, 1995; Keller, 1985). Kunda (1992) describes an environment in a high tech industry where cynicism amongst middle managers was promoted by the corporate culture as evidence of how open the company was and how freedom of expression was encouraged. This culture then left workers having no way to evaluate competing points of view. Everything was to be regarded cynically!

Cohen and Taylor (1992: 63) point out that this distancing as a way of reflecting may also become routine, and when other people join in the same process it becomes part of the everyday.¹⁸¹ Distancing does need to have “sympathetic others” who hear and join in the self-awareness process, otherwise our identity becomes entangled with the role we are playing, and we risk ‘entrapment’. Willmott (1993: 538) describes the way that playing the ‘trading game’ carries with it the cost of calculative compliance, in which employees play the role required of them by the company culture, but have the belief that they are in control. However, there is the risk of ‘entrapment’ by the game as the way people act (even if thinking differently) affects who they are even if it is unintentional. In the end taking on the role produces feelings of insecurity, confusion and emptiness (Kunda, 1992; Willmott, 1993).

¹⁷⁹ Pers. comm. 8-3-02.

¹⁸⁰ For this reason Austrin thinks he could not work under a sociological discipline that was dominated by a Government policy which would only support evidentially based research.

¹⁸¹ Note: The authors see three stages in this response – “unreflecting accommodation, self-awareness [distancing], and self-conscious reinvestment” (Cohen and Taylor, 1992: 61). There were few examples of workers in the case studies who fitted the first or the last of these stages.

This role-playing strategy can also hide a “conservative trap” (Cohen and Taylor, 1992: 56) as it allows us to continue living in the same way, remaining within the same “conventions and roles”, and does not give any “desire for change”. Willmott (1993: 538) explains that a cost of ‘playing the game’ is the exclusion of “players from involvement in the (re)design of the institutions from which these roles are derived”. Clegg (1994: 299) considers Collinson’s (1994) work in this light when he reinterprets it as an example in which distancing as a resistance technique actually facilitated workers’ acceptance of a redundancy situation. By distancing themselves from management workers had reduced the risk of “co-option or incorporation”, but this meant that they effectively did not have any knowledge of how to counter the information about redundancies, and were able to be outflanked by management. In other words, the use of distancing by workers in this situation actually produced a consequence unintended by them.

7.4.5.2 Rate busting – resistance by doing more work

In AgResearch I observed scientific workers who did more work than required by the timesheet-defined working week. I saw this as a commitment to science rather than to organisational goals. I have not come across management literature which considers how ‘loyalty’ to work could be regarded to be in competition with loyalty to the organisation. In contrast, some sociological literature does consider this to be why some workers resist organisational imperatives (Hodson, 1995b; Foner, 1993; Lundgren and Browner (1990, cited in Foner, 1993: 17)). Foner describes an example of ‘rate busting’ in a nursing home in which some nurse-aids did more work than required by management, because of their commitment to their patients. This practice gave management an increased expectation of all nurse-aids. Lundgren and Browner describe how psychiatric technicians who chose their careers out of a concern for the mentally retarded, opposed management practices reducing the delivery of good care. This was positive for residents. Murray (2000) titled her work *I pay to be a scientist*, taking up a quote from a New Zealand scientist about his poor remuneration in relation to other careers he could have followed, with the implication that science organisations rely on scientists’ love of science to get work done, not their pay or their organisational commitment.

7.4.6 What is effective resistance?

The final question needing discussion in this section on responses to normative control is what is considered effective resistance? According to Nord and Jermier (1994) many writers have “grand visions” of what resistance should accomplish.¹⁸² In their paper, *Overcoming resistance to resistance: Insights from a study of the shadows*, Nord and Jermier contend that writers reveal their shadow, or the shadow of their theoretical perspective, in what they write. For example, managerialist writers privilege managers and owners who have a “vision of a work force cooperating in the pursuit of organizational goals” (Nord and Jermier, 1994: 4). Those who resist are considered to be deviant, non-conformers (Rose, 1988: 11-12; Strebel, 1996: 86). Critical writers are disappointed on several fronts. Workers who they think should be resisting do not, and those who do seem to be resisting are doing so because they want more pay - not a revolution against capitalism. For Marx (1967 [1867]) “effective resistance was therefore something that could only occur in the future” and for Braverman (1974) workers were a “passive group” (Nord and Jermier, 1994: 3). Everyday resistance (e.g., Scott, 1986) was not of interest.¹⁸³

Collinson also demonstrates evidence of his ‘shadow’ side. He has two propositions:

First, the more concerned individuals are with crafting selves, the less effective will be their oppositional practices... Conversely, resistance is likely to be more effective when those involved are less concerned with the construction and protection of identity and more committed to the issues on which their opposition is based (Collinson, 1994: 57).

This gives Collinson away! ‘Effective’ resistance, he is saying, is not about ‘crafting selves’. Clegg (1994: 301) also accepts this perspective. He converts Collinson’s propositions into another: “When resistance is tied to a preoccupation with securing one’s identity, it may be less effective than when issue focused”.¹⁸⁴ He considers it is better to try to get more involvement in organisational processes in a way that will make “managerial practices more visible and accountable” (ibid.). My challenge

¹⁸² Smith and Thompson (1999: 230) suggest, as an example of the above, that Wilmott’s way of looking at resistance is influenced by his adherence to Buddhist principles in which worldly things do not matter, and so he expects people to give such things up in order to resist ‘properly’. If true, Wilmott’s is not a very realistic scenario!

¹⁸³ It may be that workers cannot resist in any other way in a normative system. Wanting more pay or more administrative power (e.g., promotion in management) are the only goals regarded as legitimate in our society (Hill and Turpin, 1994: 351- 355).

¹⁸⁴ Clegg presumably thinks his proposition is better or he would have used Collinson’s! To be fair, he does develop what he means by ‘effective’ resistance.

would be (as I've espoused before) – does this resistance do what the actor wants? According to Clegg, effectiveness is about whether the resistance is aiming to change the organisational processes and is not about enabling the workers to survive within that organisation. The former seems to be regarded more highly and as more legitimate by most writers, particularly if it is not just changing the organisation but society as well. As Nord and Jermier (1994) argue, what is considered “effective” resistance depends on the writer’s ‘shadow’ and that of their particular perspective.

Klein (1976[1966]), one of the few writers to suggest a view of resistance as something to be taken seriously as part of the organisational change process, views resistance as performing a beneficial function for workers. He asks for consideration of resistance as part of the way individuals maintain their “integrity”. Resistance is a key to what is important to certain people and their culture (Klein, 1976: 122-3).¹⁸⁵

Another reason for researchers not seeing resistance ‘as it is’ is that they may have an “outmoded view of power”. Nord and Jermier (1994: 5) cite Clegg (1989) as suggesting that many people still have a notion of power as being “located in human agents (like kings) who control resources” and so tend to look for resistance in actions against a human agent. “However, if ... in modern society power is exercised in more decentralized ways, resistance can be expected to be a decentralized process directed at local circumstances” (Nord and Jermier, 1994: 5).¹⁸⁶

¹⁸⁵ It is interesting that this was first published (1966) in a period when a significant amount of literature was produced on innovation and organisational change, e.g., Burns and Stalker (1966[1961]) *The Management of Innovation* and Alvin Gouldner’s *Wildcat Strike* (1965). The Klein article is reprinted in the third edition of *The Planning of Change* (Bennis, Benne, Chin & Corey, 1976).

¹⁸⁶ Normative control is a form of ‘decentralized power’ and relates to the accountability culture which acts down but not up. It is related to a different form of power – the power of policy – apart from its implementation. Policy has a power to influence the normative, cultural realm of an organisation and a society, even if it is not enacted or implemented, because people are concerned about when and if it is going to be implemented and how that will affect them. I see resistance in this situation as likely to be ‘fuzzy’, indeterminate, and not so easily articulated because it is hard for workers to know what the resistance is against and how to target it because in such systems no-one is accountable – the ‘not-me’ syndrome - and someone like the CEO says nothing! How can an organisation deal with what is causing concern if no-one actually says or acts in a way that makes it clear who is responsible. In this way both the organisation and the employees are the losers and winners. Workers can maintain their identities without taking any action that places them at risk. The organisation, on the other hand, does not have to ‘do’ anything, and so does not risk taking a stronger line, which could stir up even more resistance. A status quo of sorts is reached. It is like dealing with a bank, Inland Revenue or an electricity company when a customer is concerned about a policy. The call centre employee who answers your call is not the person who is responsible and it is unlikely you will ever be put in touch with the person who is!

Nord and Jermier (1994: 6-7) consider that a final reason for a misunderstanding of resistance is that there is an inadequate understanding of change. The authors feel that the failure to 'see' resistance will not help radical writers to address ways of providing "a realistic scenario for achieving the kind of change they seek" (ibid.: 6). By paying attention to resistance, a better understanding could be developed about how people make their lives satisfying in their own context, and this could be used to "to help empower others" (ibid.: 7).¹⁸⁷ As Hodson (1995: 102) expresses it: "The study of worker resistance has the potential to add new energy to debates in social stratification and political sociology about the meaning and goals of class struggle and the meaning and limitations of ruling class hegemony." Hodson (1995: 103) feels that such a study does not need the teleology of the end goal being the reproduction or otherwise of capitalist relations. This would leave the question of the place of, and reason for, worker resistance, more open.

In this literature review I have outlined how most contemporary work is undertaken in an environment in which the worker is not trusted either in the workplace or outside it. This has resulted in the development of systems of work control, in particular the system of normative control. This system is of special interest to this thesis, because through its use, management seek to control not only the work that people do but why they are doing it. There is debate about whether workers can resist such a system and what it means for resistance to be effective. One of the main ways in which workers can demonstrate resistance is by the use of different distancing tactics as they attempt to protect valued parts of their identities. Some writers have provided valuable models of responses to systems of control (see Sections 7.4.4 and 7.4.5), which can be compared with the responses of workers in AgResearch to the restructuring of publicly funded research. What have other writers said about the impact of this contemporary scene on the world of science, rather than on the more general world of work? The next section responds to this question.

¹⁸⁷ Andrews and Herschel (1996) in their book *Organizational Communication: Empowerment in a Technological Society*, see organisational communication as a means of empowerment, whereas I found the way they saw communication being used as another tool for control by manipulation, fitting into 'the encouragement of participation' organisational model.

7.5 Science, knowledge and ‘the market’

7.5.1 Science and the role of Government

Lord May (May, 2002: 1), Chief Scientific Adviser to the Government of the United Kingdom and a recent distinguished visitor to New Zealand, said government support for research only became common after the Second World War when the economic returns gained from it were realised. Lord May gave three broad reasons for Government support. Firstly, a country’s culture is enriched through the advancement of knowledge; secondly, “investment in science buys membership of an international enterprise, and access to the knowledge produced in other countries”¹⁸⁸; and thirdly, “it brings direct economic benefits through the transfer of people and ideas to industry” (ibid.: 2).¹⁸⁹ May unconsciously highlighted the contradiction between the motivations of Governments, those of scientists, and one of the intangible benefits from research: “... in the words of British Prime Minister Tony Blair, “the science base is the absolute bedrock of our economic performance” ”; “this quest for understanding is the prime motivation for most of the individuals engaged in publicly-funded research”;¹⁹⁰ and “it also produces a cadre of well-trained and creative individuals” (ibid.: 2).¹⁹¹

This perspective contrasts with that of other commentators. Several assert that the management of the public sector, particularly in research, is inappropriately being carried out by methods used in the private sector. Miller (1991: 120) studied university research in the U.K. where “the state is driven by a Thatcherite programme of the reduction of public expenditure ... This is confusingly masked by

¹⁸⁸ This is an acknowledgement of the benefits of shared knowledge – the openness of the publications of the science community.

¹⁸⁹ Of course, the second and the third points are contradictory because if the business perspective of ‘science as economic gain’ had its way there would be policies of private ownership of knowledge – even knowledge gained by public funding. Hence there would be no “access to the knowledge produced by other countries” and there would be no membership of such an “international enterprise”.

¹⁹⁰ Governments in New Zealand have looked to science to provide economic solutions to help the country throughout the twentieth century (Lancashire, 2001)). This debate was fuelled internationally in the 1960 and 1970s by the book *Little Science, Big Science* (Price, 1963). During the last century New Zealand’s scientists have always found a place/space for doing their own thing (Lancashire, 2001: 6) so, one could ask, what has changed?

¹⁹¹ These acknowledgements are quite remarkable when compared to the New Zealand scene where what scientists do seems to receive no recognition or value at all (except if it is carried out overseas and the scientist wins a Nobel Prize for it, e.g., MacDiarmid). Scientists are not valued for what they are – rather they are valued for what they can produce of economic value.

a free market rhetoric but results in increased attempts to direct and control research.” Miller cites Lyotard (1984: 45): “The prevailing corporate norms of work management spread to the applied science laboratory: hierarchy, centralised decision making, teamwork, calculation of individual and collective returns, the development of saleable programmes, market research and so on.” Smith, Knights & Willmott (1991) edited a collection of papers, *White-collar work: the non-manual labour process*, devoted to this topic. Hill and Turpin (1994: 327) have described the scene in an Australian university symbolised by a high security building containing the university’s commercial activities. In this environment, academic research has to be managed according to commercial principles and its goal is to ‘identify what industry wants, and give it to them’. Research is not to be based on excellence or on gaining new knowledge.

Governments do not appear to be interested in science per se but have the belief that it is the way for the country to go ahead economically (e.g., May, 2002, Hodgson, 2000b, c and d). According to Daniel Sarewitz (1996), this is right and proper: a Government has a responsibility to get value for its money. Sarewitz (1996, 1997) insists that the promises made by science in response to science policy should be examined in a realistic way, because it is important in a democracy that such things are open to examination. He identifies five ‘myths’ of science policy:

- 1) The myth of infinite benefit: More science and more technology will lead to more public good.
- 2) The myth of unfettered research: Any scientifically reasonable line of research into fundamental natural processes is as likely to yield societal benefit as any other.
- 3) The myth of accountability: Peer review, reproducibility of results, and other controls on the quality of scientific research embody the principal ethical responsibilities of the research system.¹⁹²
- 4) The myth of authoritativeness: Scientific information provides an objective basis for resolving political disputes.¹⁹³
- 5) The myth of the endless frontier: New knowledge generated at the frontiers of science is autonomous from its moral and practical consequences in society (Sarewitz, 1996: 10-11).

¹⁹² Feynman (1988), a physicist famous for his communication skills, suggests in an appendix titled ‘The value of science’ to his book “*What do you care what other people think?*” *Further adventures of a curious character*, that scientists should not be held morally accountable for what they do as they are mere mortals like everyone else, and that this is the job of society as a whole. To my mind, Feynman was ducking his responsibilities as a citizen.

¹⁹³ An example of this point of view is that of Lord May (2002: 6), who believes that *all* decisions in society should be informed by “good science”.

When it comes to deciding whether science is benefiting society, Sarewitz feels that the values of the marketplace are not sufficient (ibid.: 122-123). His model is one of “a sustainable science focused on accountability and well-distributed social benefits” (Guston, 1996: 1807). He thinks “it is time for scientists to reassess their contract with society and tackle the connection ... between progress in science and technology and progress in society” (Beardsley, 1997: 119).

7.5.2 The risks of commercial work in science

As science practice becomes dominated by forms of work control and ideologies that were previously alien to it, many issues to do with intellectual property and the ownership of knowledge arise. Some of these issues are not new. Rose discussed what happened in post-World War I Britain when a research institution dedicated to the study of work had to finance itself from consultation work. The problems it studied were determined by clients and so were not publishable, and there was insufficient funding for basic research (Rose, 1978: 67). Lyotard (1984, cited in Miller, 1996: 120) pointed out in a report he wrote on British universities in the 1980s, that only those who can pay or be paid, can test new theories or technology. Hence “[a]n equation between wealth, efficiency and truth is thus established”.

According to Simpson and Craig (1997: 72), there is an “emergent model of scientific inquiry” in New Zealand, which should be better able to address the issues of public concern such as environmental protection and health care. This model is a cross-disciplinary, collaborative one with a wider range of stakeholders and is not so deterministic, seeking relative truths rather than the ‘one truth’. The authors do not consider the implications of this change. Hill and Turpin (1994), and Turpin and Hill (1995), however, writing in an Australian context, issue some timely warnings about what might be lost. These authors fear that the marketplace is so much based on immediacy and advantage that no time is given for the use of the scientific values of reflection and scrutiny of the impact of such a change (Hill and Turpin, 1994: 356).

Ziman (1991) describes science as a market system where research results are exchanged for rewards, such as ‘prestige’. What is happening now is the introduction of commercial market forces into this system which “introduces a damaging conflict between institutional and individual interests replacing quality by price as a principle

of competition (Ziman, 1990 (*sic*))” and “... privilege and authority based on knowledge are displaced ...” (Hill and Turpin, 1994: 351). In the view of Hill and Turpin (1994: 353), “the two value systems are in direct opposition”. In the ‘scientific knowledge system’ power and prestige is gained by contributing to human knowledge, whereas in the ‘commercial market system’ it is gained by “money or administrative symbols”. In the former system these goals are achieved by “persuasion and mastery of discourse”, whereas in the latter they are achieved by ‘playing the market’. In science the core values are “rigour of validity claim and openness of performance”, whereas in commerce core values are “measurement by output rather than process integrity” and manipulation rather than openness.

According to Turpin, Garrett-Jones & Rankin (1996: 268) there is growing evidence that greater innovation occurs through collaboration than by the use of publicly available scientific knowledge.¹⁹⁴ It might be “that science as the pursuit of knowledge, may become a cultural relic, an activity engaged in by the ‘elders’ but of little relevance (read economic relevance) today” (ibid.: 281). An alternative, “more optimistic view” is that science could become part of community culture through networking and be regenerated through this relationship (ibid.).

Hill and Turpin (1994: 335-336) argue that the change is not just a clash of cultures. The commercial marketplace is actually deciding what knowledge is. “The implications are profound ... for [the] construction of the very knowledge base that will shape our collective future as well as for the paths of access to this knowledge” (ibid.: 336). The authors assert that a ‘boundary struggle’ is occurring between these two very different cultures (ibid.: 354).¹⁹⁵ However, Hill and Turpin are aware that academics may outwardly be playing the entrepreneurial role required of them while

¹⁹⁴ There is much to argue about in this viewpoint but as this thesis is not about knowledge production it is not the place to do so at length. Collaborators, to be effective, need to maintain difference as it is the source of stimulation. In research difference is usually disciplinary, and if working with others such as managers and industry representatives, difference will be cultural. A team can lose its diversity of viewpoints if it does not also maintain links with others and members may do this partly by keeping in touch with the literature of their respective cultures and disciplines. In other words, it is important to also have other available and trusted ‘pools of knowledge in which to fish’ as Turpin et al. (1996: 268) would have it. Also, as the MBU demonstrated, even the importance of continually improving technical competence is based on what has gone before, *both* in the way members of the group share knowledge within the lab *and* in the literature of their rather recent discipline.

¹⁹⁵ Hill and Turpin (1994) talk of the ‘academic’ lifeworld because their paper is about universities. It equally applies to the public science system, as their later paper (Turpin and Hill, 1995) asserts.

quietly protecting their “knowledge-oriented culture” (ibid.: 355-6). They may be secretly resisting, in other words.

7.6 Conclusion

The present research is timely. In 2001 the RSNZ set up a discussion of its code of ethics, which was mainly concerned about the impact of business culture on science research. In the same year the Randall Report on biotechnology in New Zealand, commissioned by Industry New Zealand, contained a backlash against CRIs and their ownership of intellectual property, which, in the opinion of Randall, should be passed on to businesses to develop. Randall considered that the purpose of CRIs was to develop products and processes based on scientific innovation through the expensive stages of development which businesses could not afford until they reached the point where they could be passed over to business, which would then develop, market and sell such products for profit. He did not think that the CRIs should be in competition with business.

This chapter has provided a sociological background and a discussion based on the sociological literature of the emerging themes from Part B. I have considered what writers have said about the meaning of work and introduced the concepts of alienation and estrangement, important to the core development of this thesis. I have explained the way different systems of control of work and workers have been developed until the present day in which there has become an emphasis on systems which try to control not only what and how work is done, but also the values of the workers in the work environment – the reasons why they are there and the sort of people they are. I have covered the debate about whether workers are able to resist such systems, why they would want to, and what the nature of such resistance could be and the purposes it should serve. This introduced the concept of compliance and the different frameworks other writers have used for workers’ responses to systems of control. Both of these are essential to the development of models of resistance in the next chapter, based on incorporating these ideas with my own distilled from my observations of workers in AgResearch. I have included an acknowledgement of the challenges the world of science is facing as other forces, such as Government policy and business interests, lay claim to its territory. The scene is now set for the next and final chapter.

PART C: FURTHER ANALYSIS INFORMED BY THE LITERATURE

Chapter 8: A model to interpret the response to change?

I now wish to reposition the data and its analysis by using, challenging and extending the ideas outlined in the context and the literature (Chapter 7). First, I will reformulate the context so that it can be seen in terms of boundary struggles that are occurring at and across many different levels. Then, I will concentrate on how these boundary struggles have impacted on individual workers. AgResearch's senior management, in response to the environment in which it finds itself, has corporatised. As part of corporatisation, the employer has used a system of normative control of work in order to encourage workers to produce work products which meet both company and Government goals. The result of this has been that scientific workers (that is scientists and technical workers) have experienced a sense of estrangement, and scientists additionally have experienced a sense of alienation. I describe how workers have acted to resist and protect themselves from these experiences, and I provide two models of the resistance process which explain how scientific workers have managed to comply to enable the work of the organisation to carry on while they continue to do work that is meaningful to them. Two models are necessary because although the processes of resisting estrangement and alienation are similar there are important differences between the two.

8.1 Reviewing the context: the concept of 'boundary struggle'

The restructuring of the public sector carried out by the New Zealand Government and its continuing implementation has created a flow-on effect, which has caused different boundary struggles. It has caused a questioning of who and what is now important in New Zealand society – business, money and the market, management and efficiency, or people with their differing values and cultures. This is a debate between public good versus private good.¹⁹⁶ By restructuring the public funding of science research, tensions have been created between Government and its policy provider (MoRST), its deliverer of funding (FRST), and its providers of research, the

¹⁹⁶ Radio NZ's then political reporter, Al Morrison, referring to the essential difference between left and right political parties, Morning Report, 5th April 2002.

CRI and universities. Within the CRIs, science groups compete for funding, science groups are set against those who service them such as accountants and Information Technology Services (ITS) staff, and science workers grumble about corporate management. Individual workers feel as if their very selves, their identities, have become the site/arena of a boundary struggle. Who decides who they are and why they do the work they do? Who decides how they make their work meaningful?

It is apparent to me that scientific workers in AgResearch feel they are experiencing something more akin to a take-over bid of their self-identity, but on the surface they are subtly negotiating this, masking the subterranean struggle that is going on! However, the language of 'boundary struggle', the visual images that it suggests, and the way it can be used to encompass both the micro and the macro situations I am encountering in this thesis, make these words a useful description. They suggest that there is a questioning in process. What is mine and what is yours? These words hint at struggles for possession of identity or fights for ownership of meaning.

The public science research funding system in New Zealand has been transformed into one in which mainly crown research institutes, with Ministers of the Crown as shareholders representing the Government, compete for funding. Limitations in this funding, and its decline in particular areas of research, has encouraged these organisations to go into the market place to complement their revenue by seeking private business contracts for research. Government has supported the commercial nature of these organisations by setting them up as companies and requiring them to make a profit. This has created confusion at the public/private good level. The organisation (CRI) is now free to appropriate the work of scientific workers in order to produce saleable products, processes, or patentable products or processes, to make a profit for the 'company'. This impacts on the work of science. Who owns its products? Such confusion generates boundary struggles. For example, Rae (scientist) talked of her discomfort at finding there were people employed by AgResearch's corporate office to go through her group's research reports and funding proposals looking for potential commercial products. This contests the ownership of the work *and* implies that members of this group do not have the knowledge to carry out this activity or cannot be trusted to do so. In AgResearch in recent years, Non-Specific

Output Funding (NSOF)¹⁹⁷ has been used solely for preliminary work on possible products. In the past it was frequently used to prepare a strong bid for the next PGSF bidding round. Celentis was specifically created to carry out the R&D involved in changing scientific products into commercial products. But is this search for profit for the private or the public good? After all, AgResearch is a Government-owned company.¹⁹⁸ Restructuring has implied that the values of the market place are now applicable to the public arena. The infiltration of the language of business into the everyday talk of AgResearch and the process of corporatisation that it has undergone, imply that colonisation of this space has been successful. But has it been accepted by those who work for rather than manage this organisation?

Before I go further, it is important to note that boundary struggles relating to scientific work are not new in New Zealand, just manifest in different (new) ways. Research should not have been carried out within MAF, for instance. When DSIR was established in 1926, MAF argued that its agricultural research function was an important part of its extension work with farmers. This led to MAF's research being allowed to develop in parallel with DSIR's (Galbreath, 1998). There were boundary struggles over who did what right through the history of DSIR and MAF. The endophyte story illustrates one of these struggles. MAF was trying to produce animals that were resistant to ryegrass staggers while DSIR was trying to understand the cause. The discovery of endophyte as the cause of ryegrass staggers was published by both groups back-to-back in the same issue of the *New Zealand Veterinary Journal*. This division continued into AgResearch with the group based at Grasslands (ex-DSIR) competing with the one based at Ruakura (ex-MAF).

8.2 Corporatisation of the public sector: a response to environment

Government policy has indicated that competition and the reward of profit are seen as tools which ensure greater efficient use of public money and greater accountability to Government goals. AgResearch has put structures in place in response to this

¹⁹⁷ Each CRI received a certain proportion of its funding over and above that given to it for specific programmes. This was called NSOF.

¹⁹⁸ The Association of Crown Research Institutes (ACRI) issued a press statement that claimed: "CRIs [are] not more concerned about profitability than the public good" and cited the *CRI Act*. ACRI was responding to criticism by Jeanette Fitzsimons, co-leader of the Green Party, during the 2002 election campaign. ACRI did not ask those who worked in CRIs what they felt about this claim (RSNZ Daily News, 26-7-02).

environment (Simpson and Powell, 1999: 441). The dominant considerations in this environment are thus Government policy (and hence FRST implementation) and globalisation, and the response was to make AgResearch competitive in the international market place. In this section I first consider the impact of competitive values within the CRI and secondly I discuss how managers have been placed within the CRI to make it accountable and efficient.

8.2.1 Competition: inducing boundary struggles within the CRI

By introducing competition into the public funding of science and by making CRIs companies, Government policy, in spite of its rhetoric emphasising collaboration, encouraged boundary struggles. This became ingrained within the organisation. It also stimulated competitive attitudes between individual CRIs and universities, for example.¹⁹⁹

The data demonstrate that even with restructuring, this particular CRI, AgResearch, contains some science groups and support/service groups which are competing rather than acting for the good of the organisation as a whole. Members of one science group in the study were reluctant to collaborate within a competitive environment. The group built up its own self-sufficiency at the expense of sharing with the organisation as a whole.²⁰⁰ This contrasted with two of the other groups which were collaborative and which contracted out substantial parts of their laboratory work.

When I suggested to Greg (scientist) that he share with other groups the way in which he ‘managed the accountants’, he declined. His group was competitive internally, demonstrated by the ‘patch protection’ on the part of the technical workers both over their own skills and the domain of the labs, and externally, demonstrated by the strong boundaries and self-sufficiency of the group. This contrasted with another group in which funding was more secure and where members were encouraged within their lab environment to share their skills. This group sought

¹⁹⁹ It could be considered that this has changed recently with the special efforts by Government to fund ‘Centres of Research Excellence’ (COREs) involving collaboration between universities and CRIs. However, I suspect these groups have come together as a matter of necessity and there will be boundary struggles within them over allocation of funding and status.

²⁰⁰ Greg (scientist) told me how the group to which he belonged had started with him as sole member. Now the group has more than 12 members. It is ‘his’ group and the workers in it owe their livelihoods to him.

collaboration both within AgResearch and internationally. However, the entire public funding system is competitive and has discouraged groups from being altruistic toward one another because they are all competitors in the same external system. In the present environment they are becoming internal competitors as well, because FRST's movement to larger, more bulk-funded, programmes places more responsibility on the organisation than the group for the content of programmes, than was the case in the past.²⁰¹

Within the organisation there were also boundary struggles on the part of each of the service groups as they attempted to establish their own power and identity rather than serve the scientific practice that is the work of the organisation. For example, the accountants used a language and practised a method of accountancy not understood by scientists. It did not help the work of science, as my earlier quotes quite clearly indicate. Accountants made little attempt to bridge this gap. A business manager in acknowledging this to me, told me how he had changed from this system within another organisation he had worked for, and he wished AgResearch would do the same. The ITS Group was having its own boundary struggle. ITS staff were 'not allowed' by their manager to 'participate' more in the work of science, as Bert, for instance, wanted to do by writing macros in specific software programmes which could have helped scientific work.²⁰² They had to confine themselves to maintaining the computing system. The Human Relations staff had the role of advisors and in my experience were the only advocates of employees that I discovered, yet they had to bear the brunt of managers not following their advice.

Merton (1968[1957]) wrote of how departments within bureaucracies developed loyalties and promoted group interests at the expense of the whole (Abercrombie et al., 1988: 23). It was such a proliferation of power blocks within hierarchies that was one of the justifications for the restructuring of the public sector in New Zealand (Britton, Le Heron, & Pawson, 1992; Shaw, 2000), and for doing it at a rapid pace.

²⁰¹ Under this scenario FRST was negotiating with one senior manager in AgResearch for all programmes, rather than through the programme leaders, as was past practice.

²⁰² An example of another boundary that was detrimental to the business of science and where collaboration rather than difference would have been helpful.

I believe CRIs are in a transition period, which means that there is no established ethos accepted by everyone in the organisation. Is the power to reside with the scientists or with members of the corporate and Board who wish science to become a business venture? That this is a covert struggle rather than a collaborative effort says a lot about the parts of the organisation concerned. The Annual Reports tell their own story. In the 1997 Annual Report there is no reference to the governance of the organisation. The 1998 and 1999 Reports (AgResearch 1998: 28-29 and AgResearch 1999a: 24 respectively) indicate that the company's strategic direction and the achievement of the long-term goals is the responsibility of the Board and management. In the 2000 Report (AgResearch 2000a: 28) "the establishment of the long-term goals, and the strategic plans to achieve those goals" are one of the primary responsibilities of the Board. Nowhere does it say that workers should be consulted. It does not mention that the stakeholders should be consulted either, though that is part of the *CRI Act 1992*, and is something the Board does do. In fact nothing is mentioned about the Act in this section of the annual report but the auditor's report in all reports from 1997 to 2000 states that complying with that Act, the *Public Finance Act 1989* and the *Financial Reporting Act 1993* are a responsibility of the Board. What is to be made of this development? The introduction of the section on 'Corporate Governance' in 1998 can be seen as coinciding with the arrival of Keith Steele as CEO, and perhaps as more questions were being raised by workers about the company's strategic direction he saw it as necessary to distance himself and make it the responsibility of the Board. However, he did not ever make it clear to workers that this was so.²⁰³

8.2.2 Managerialism: a response to context

Alongside corporatisation, the Government's restructuring has supported the employment of managers to ensure greater accountability to Government policy and greater efficiency in the use of public money. This has increased managerialism (Boston & Dalziel, 1992; Boston et al., 1991, 1996; Easton, 1995, 1997; Rees & Rodley, 1995). The restructuring of research to be accountable to Government goals

²⁰³ I emailed the CEO at the time of the discussion of the results from the so-called 'staff morale' survey (15-2-00) to express my concern about the impact of the negative remarks of staff on him personally. I felt that if he could state the issues of governance involved it could solve a lot of misunderstanding (if that was what it was), about the role of staff in the choice of strategic direction. Maybe the change in the 2000 Annual Report was a result of this? This example also illustrates the reification of the organisation. The Strategic Plan does not have an author!

contradicts the British model on which the DSIR in New Zealand had been based. This model, previously discussed in Section 3.3, advocated the separation of research from the government's administrative departmental control. The CRI model implies that scientific workers are not efficient in their use of funding or accountable in this way, and management is put in place to ensure that they follow Government policy. Such interest in accountability and efficiency obviously challenges boundaries. To whom should workers be accountable? As Government policy changes so frequently in the experience of many of these workers, it might make more sense to be accountable to something more stable like the science community, or the 'good of New Zealand' as they see it. Scientific workers do not feel that producing products and IP for 'the company' necessarily performs any of these functions.

I have described how the Government's requirements for accountability and efficiency in the use of public funding for research has meant it crossed the boundary formerly maintained by the Haldane Principle. AgResearch has responded to this and to the competitive environment, by corporatising.

8.3 Enforcing corporatisation: the use normative control

AgResearch developed mission, vision and value statements, a strategic direction, internal restructuring and repositioning, and best-practice policies. The very statement of such things led to the use of normative control as a management method for ensuring worker buy-in. AgResearch is dependent on scientific workers' creativity to make it into a profitable company so that is what it is trying to control. Previously in the public sector (such as when AgResearch started and in DSIR and MAF Tech) there was not this same concern about control by management, particularly as interpreted and implemented by Human Resources practice. Encompassing managerialism and the use of a system of normative control of work to implement this, has induced new manifestations of micro-level boundary struggles. These are the struggles occurring within the CRI between individuals and structures, which impact on how individuals make their work meaningful, and on who they are, their self-identities.

A normative control system implies that management wishes to control the norms of the people working in an organisation. Normative control encourages workers to

believe in and practice the direction and goals of the organisation as espoused by its Board and management. It implies that workers should replace their own meanings with those of the organisation, where these are not consonant. If they do not, then they will need to be coerced into it by such organisational structures as the performance appraisal process.²⁰⁴ The aims and direction of the organisation claim the space or push the boundaries of workers' self-identities, implying that if workers are able to commit to these values they will feel as if they belong and will become productive members of the organisation.²⁰⁵ One obvious challenge to this notion is its implication of stability and security. In practice the direction and organisational description can change as the organisation itself struggles to survive in a constantly changing environment. Any inferred promise of security cannot be realised. In fact, as I will discuss, the promotion of *insecurity* may well be a tactic employed by management to keep workers performing in order to keep their jobs. (See Section 8.4.3.) Hence normative control comes to be about trust and obedience to the entity of the company rather than to what the company's representatives are saying, because these statements are always going to be open to change. For scientific workers, such abstract, slavish loyalty is not part of who they are. As part of their scientific indoctrination they have been trained to consider information sceptically and not to trust something they cannot empirically examine.

In the current reframing of the context of this research, the concepts of estrangement and alienation can be used as analytical devices as they give useful insights into the experiences of scientific workers under normative control. The next two sections describe these experiences and relate them to the two concepts as they were developed in the previous chapter.

8.4 Estrangement

A possible interpretation of the changes experienced by workers through the restructuring of the public sector in New Zealand is that they have been thrust into the neo-liberally oriented world of recent Governments' policy, as taken up by AgResearch. Thus the norms and values of present society, as represented by

²⁰⁴ Willmott (1993) has called his paper on this subject *Strength is Ignorance; Slavery is Freedom: Managing Culture in Modern Organizations*.

²⁰⁵ Policy is about normative control. It is a form of rhetoric that describes how some particular group wants the world/nation/organisation 'to be'.

Government policy, are in conflict with the values older workers hold from the past and the values all workers perceive as being upheld by the scientific community. This has left them with a sense of estrangement as described earlier in Section 7.1.1: a sense of no longer fitting or belonging as they are no longer valued or considered able to contribute to the present needs of society as espoused by Government and company policy. Continuing change and the uncertainty this has created has exacerbated these feelings. For example, in AgResearch there was almost constant change in the way the organisational direction has been articulated and implemented since the present CEO was appointed ('strategic planning', 'biotechnology company', 'food and fibre' research, 'life sciences company', 'science research institute' to 'company', 'divisions' to 'platforms', 'repositioning'). This illustrates the importance of context to this work.

The next subsections describe the various ways workers experienced estrangement – through feeling less valued by their work organisation, through belonging to groups both in and out of the organisation that have values conflicting with those of the organisation, through the feelings of insecurity engendered by the uncertainty of the current environment, through the lack of trust the accountability culture implies, through reification of AgResearch, and finally through the way their autonomy and identity are being challenged.

8.4.1 Experiencing a loss of value

There are many ways in which workers have felt less valued within AgResearch, and which have contributed to a sense of estrangement. In Section 5.1.1, I outlined how there is a 'listening up' culture in AgResearch. The 'listening up' culture provides evidence of the power of normative control. It illustrates how workers experience estrangement (and alienation). There is no arena within the organisation for the voices of the workers to be heard. They feel undervalued and unappreciated, demonstrating their sense of estrangement from the organisation. This lack of participation also means that there are few avenues open to them to address their control over the direction and end use of their work. Part of this culture was a lack of feedback from management whenever workers responded to management's requests for reports and information. Scientific workers in AgResearch have societal goals in mind, in terms of the purposes they want their work to serve. The way the

organisation and the Government are articulating the actions they wish workers to take does not permit the achievement of these goals (Merton, 1968: 235).

The loss of the voice of scientists is reflected outside the organisation. Since restructuring in New Zealand, policy-making has been separated from its implementation. This has meant that interested parties (stakeholders) could play no role (Lancashire, 2001). As a result, boundary struggles are occurring at the micro or individual level, partly because scientists have been excluded from the macro-level of Government policy on the public funding of research. This exclusion has carried over into organisational policy. The policy arena is not one in which scientific workers have had a voice. They have been physically excluded as stakeholders, and the language of this arena – that of business, the market and management, as well as the philosophy of these cultures - has also excluded them.

8.4.2 Belonging and being different

When scientific workers choose which community or group to affiliate to or remain with, it will be one which gives them a sense of affirmation, which makes them feel valued and as contributing to something in a way that aligns with their sense of what makes work meaningful, and fits with their identity.²⁰⁶ This means that workers choose to accept the constraints involved in being part of the groups they work in and belong to (e.g., science groups; the science community). They do not feel coerced into acceptance. They are part of the society they live in and were born into, whose values are mainly accepted rather than rebelled against by these particular people.

The research data indicate that there is definite feeling of ambivalence expressed by workers about the company. They want to feel as if they belong, but they do not feel as if they do, because they do not feel valued. They find themselves both happy and unhappy. I have described in Chapters 5 and 6, the fear of loss of self and the conflict between their identities as group members, scientific workers, members of society past and present, and what the company wants them to be. Also as Goffman (1961a: 320) described it: “It is ... against something that the self may emerge.” By

²⁰⁶ Though workers are assigned to a group as part of their work, they choose whether or not they feel as if they ‘belong’ to it or have a commitment to it. Nearly all workers who were participants in this research felt this sense of belonging.

discovering themselves to be different from the desired company culture, employees become more aware of their own identity and how it is different. I suggest that there are stronger ways in which workers can get a feeling of belonging than to the company – that is through their scientific peers or through their work groups. There are also activities and groups they belong to outside the workplace. Ashforth and Mael (1998: 96) write that resistance can occur to maintain a balance between these “valued selves”.

Workers can also find value in the actual work they do rather than their relationships with others and the acknowledgement of others (Section 5.4). In AgResearch, scientific workers mainly find their jobs very fulfilling and I suspect feel a sense of unease because that, by itself, is not sufficient to make them happy. Ashforth and Mael argue from their reading of the literature that motives for resistance to do with identity arise from “perceived threats to social regard (respect), self-regard (self-esteem), individuality, autonomy and self efficacy, moral principles ...” (ibid: 1998: 98).

8.4.3 Experiencing uncertainty

The other aspect of estrangement I wish to explore is the experience of uncertainty. At the time I was leaving AgResearch (Feb. 2001), the CEO acknowledged that there had been continual change over the past few years and he promised that now was a time for consolidation. Immediately a new form of employment contract was proposed which workers have found most difficult. Some of them discovered they were considered to be overpaid and were labelled as ‘grandparenting’, which meant they would not receive any pay increases until others had caught up with them. So not only was the sense of insecurity reinforced, but some workers also found out their work was no longer valued as much as it had been in the past.

Following the restructuring in 1992 there has been a threat of job losses. In my experience, this seemed to be more of a threat than an actuality but it inspired much uncertainty and insecurity. The repositioning exercise, described in Section 6.1, is a good example of this. It is difficult to feel valued by an organisation which is unsure of whether it wants you or not. One day you fit and the next day you do not, and you

know that next year you might be ‘wanted’ again. These “techniques of individualisation” mask the effects of power (May, 1999: 10).

The restructuring within AgResearch, and the changes in FRST’s implementation of Government policy, have certainly happened with unerring frequency! Continuous change also promotes a sense within individuals that they have to learn how to survive. The techniques people develop to survive may not be in the company’s best interests. Bauman’s summary of Crozier’s work which demonstrates that “most power is exercised by such units as manage to remain the sources of other units’ uncertainty” (Bauman, 1998: 34) describes to me the ‘game’ many groups within AgResearch are playing. Crozier’s ideas about uncertainty also align with change because continual change is a way of maintaining uncertainty. In some management literature, uncertainty is espoused as a way of keeping everyone on their toes and performing. (However, what is not addressed is how constant change can cripple work output because of the continual insecurity it causes (Nilakant and Ramnarayan, 1998: 114, 359).)

8.4.4 Accountability

In Section 5.5.2 I described how an accountability culture requires reports to be continually written and passed upwards in order to demonstrate that public money has been spent ‘properly’. I also described how there is little feedback given about such reports. They are a requirement, a tick in a box. The accomplishment is completion, not feedback. This does not give the science groups any indication of whether their contribution is valued and how it could be improved. In fact, in AgResearch there was frequently no response given upon the receipt of a report.

The emphasis that restructuring has placed on accountability has promoted a culture which links the lack of value and the uncertainty aspects of estrangement. By making people feel continually accountable, they feel they are not trusted. This challenges their integrity, and with that comes an experience of not being valued. Such an environment generates continual insecurity. I am not considering the stress and burnout created, but why these things are experienced. There is stress in having one’s identity challenged by a corporate management that does not even seem to be aware that it is doing so, and puts no mechanisms in place to find out the impact of its

policies. If corporate management does know what it is doing and initiates no procedures to consider the impact on its workforce, then it must assume that it has the right to meddle in workers' lives in this way and is not accountable to them. Accountability seems to work only in one direction and that is 'up'. The manager of a factory is not required to be accountable to its workers; why should workers in a "science" company expect to be treated any differently? If an organisation is accountable then presumably it has to demonstrate that accountability by finding out the impact of its policies on its workers and whether they are effectively implemented or not. Accountability should presumably be about what is done rather than what is said to be done.

8.4.5 Reification – a manifestation of estrangement?

It was a common practice of scientific workers in AgResearch to distance themselves from the organisation by seeing it as apart from themselves and blaming it for anything they saw as wrong, or for how they felt about it. Workers' unhappiness was almost always perceived as the 'fault' of the organisation (or the CEO), not the AgResearch Board, FRST, MoRST or the Government, though one of the SPLs did demonstrate a switch to blaming FRST (see Section 6.2.1). A feeling of estrangement is produced because workers believe it is beyond their sphere of influence to change the organisation.²⁰⁷ Reification (Abercrombie et al., 1988: 205)²⁰⁸ is part of the establishment of an organisational identity practised by workers and corporate management alike and by those outside the organisation.

This attitude was further encouraged in AgResearch by the formation of a 'One AgResearch' promotion of which I was part. The construction of a unified culture is one of the aims of normative control and is recommended by many organisational culture theorists (e.g., Nilakant and Ramnarayan, 1998; Thornhill, Lewis, Millmore, & Saunders, 2000; Schein, 1992; Hannan & Freeman, 1989). As my case studies demonstrate, different science groups have quite different identities. Presuming that a single culture could be formed out of such disparate groups was rather naïve on the

²⁰⁷ However, it also lets them off the hook, as workers give that as a reason for not trying.

²⁰⁸ Reification is usually identified with alienation in its later post-Marxian meanings (see Section 7.1), but as I wish to stay with the earlier Marxian concept of alienation I feel reification demonstrates estrangement in this context. Of course, alienation is also demonstrated when, for example, corporate managers employ an anonymous 'someone' to assess the potential for products in scientific reports and proposals without consultation with the scientists concerned.

part of AgResearch management and the Green to Gold strategic planning implementation. Bate (1998), an organisational culture theorist, says that organisations are not unities. Reification arises when this organisational culture is defined by corporate management who then claim it as ‘the AgResearch culture’ and give it powers of its own without making the link to themselves explicit. Rose (1978: 245) claims that Silverman refers to organisations in this way, whereas *he* thinks:

... the most important needs or actions which theorists attribute to organizations as entities are either suspiciously similar to those of organizational *leaders*, or those which a business consultant believes will improve efficiency The claim that organizations are social units which possess goals obscures the variety of aims which their members, including their leaders, pursue in practice.

Rose could say that the powerful members of organisations can hide their motives behind the organisational mission and vision statements.

8.4.6 Autonomy and identity: linking estrangement and alienation

While some workers have a need for autonomy and independence, others need to feel a valued part of a working group; and some may enjoy a balance. Within AgResearch there is the constant tension, as is probably inevitable in any organisation, particularly one devoted to scientific research, involved in lower managers²⁰⁹ giving workers autonomy over their everyday work, while at the same time taking an interest in them and in what they are doing. The emphasis on autonomy by scientists, conveyed for example, in quotes by Dave and Graham (Sections 5.3.6 and 5.4.4 respectively), indicates there may not be such a need for feedback and encouragement for scientists from within the organisation because they have their own community – fellow scientists. This community could be seen to provide stability and a sense of social cohesion not available from the organisation as it is subject to such a changing environment. Having their needs met in this community, however, may reduce some scientists’ understanding that others in their groups (Gouldner’s ‘locals’ rather than ‘cosmopolitans’) may need feedback and reinforcement about their value, and do not like working as strongly autonomous and isolated individuals. The other ‘acceptable’ source of cohesion for workers is the team, which can provide a sense of everyday belonging and sociability as well as

²⁰⁹ Corporate management instituted normative control.

being the source of continual opportunities for learning and intellectual challenge (see Section 8.7).

8.5 Alienation

As scientific workers have moved from a public service environment into a capitalist system of production, they are experiencing alienation, as described by Marx (see Section 7.1.1).²¹⁰ They are losing control over what research they do and the end product, creating a separation between their work and the goals and purposes it has for them. The Government has control over research priorities, as does the organisational corporate, which is viewed by scientists as having non-science based interests. Marx believed that workers in capitalist economies remained largely unaware of their alienation²¹¹ whereas, in AgResearch, workers are frequently taking steps to resist their lack of control over the work they do, and the results of the work they do, as this thesis demonstrates. It is ironic (in terms of Marxist philosophy) that the best way the Endophyte Group can control the work it does is through taking up more fully the opportunities the market offers in the nature of commercial contracts (Hunt, 2002b). A contrast to this is the alienation experienced by middle managers as they are co-opted by the capitalist system to become instrumental workers. At no point, however, is the profit making capacity of the organisation challenged. All workers remain within the system, even though they feel they are not likely to see the profits made spent in their areas of work.²¹²

An example of the way in which scientists are alienated from their science by management actions which are trying to ensure accountability, is given by a training session conducted by a contract staff member to implement the new performance appraisal system (previously referred to in Section 5.5.3.1). Participants were asked to state their objectives for the year. These had to be measurable. One of the group leaders, Ray, was very much against this because he said it could restrict what

²¹⁰ In some senses the word ‘alienation’ could be replaced by ‘challenges to autonomy’. However, for me, alienation expresses something more. It gives the feeling of an enforced separation from something that matters to a person, rather than just losing control or power over it. It has a feeling or transcendent, spiritual dimension which autonomy does not have.

²¹¹ Two responsibilities of the Communist Party were to (1) ‘educate’ workers as to their oppression and hence, alienation; and (2) if opposition arose, to vet it ‘in the interests’ of the working class.

²¹² I personally find this difficult to understand as one way scientists could operate/resist is to overspend their budgets to the extent of the profit which has been taken out of them! However, to be effective, this tactic would require them to act collectively.

workers did. His objective was: ‘Determine the range of fungal toxins responsible for increasing lamb growth rate on two pastures by May 2020.’ There was discussion about the meaning of ‘range of’. Ray did not want a number but the trainer, Sarah, did. Ray sought Dave’s support for the idea that scientists may not know how many toxins they could find. For Ray, the point was that he ‘had looked at, at least two pastures’. The object of the exercise did not have to do with how many toxins were found at all. This scenario illustrates how management (via HR) in trying to control the work of scientists, did not understand it and by trying to quantify it, limited it.

By setting up Celentis and perusing scientific proposals and reports at corporate for IP potential and the possibility of a ‘product’, the organisational management is enabling scientists to continue with their science and not have to concern themselves with products. At the same time, such developments contradictorily distance scientists from the end product of their labour and are part of the alienation process. The organisational vetting process which scientific papers pass through before publication can also be seen in this light.

I maintain that alienation is predominantly being experienced by workers at the scientist level and above because these are the scientific workers whose labour ‘product’ and the choices they have had around that are being eroded. Technical workers have not been experiencing conscious feelings of alienation. I say this for three reasons.

First, in their case, it has not been part of their work to control its direction and end result (as I have described indirectly in Sections 5.2 and 5.4, in the difference between the work of scientists and technical workers).

Second, the capacity of technical workers in particular, to have control over the product of their work has actually increased. Many scientific workers do not make a distinction between ‘mental’ and ‘manual’ labour (Littler and Salaman, 1985: 85). In fact, some AgResearch scientists who have technical help, make considerable efforts to carry out some of their practical work themselves rather than just plan it, in order to ‘keep their hand in’ (e.g., Mark, Noel, Owen, Rae, Graham, Wade). All scientific workers (scientists included) have experienced work change which could be regarded

as requiring them to be both less skilled and more skilled, and could therefore be perceived as a reversion back to craft labour (Piore and Sabel, 1984). With the loss of the lower hierarchy of so-called ‘manual’ workers in the late 1980’s and early 1990’s (e.g., numbers at the Winchmore research farm have fallen from 48 permanent staff in 1985 to 6 in 2001²¹³), their replacement by fewer temporary wage workers who are hired when required, and the movement to the lab from the field, workers need to possess a wider range of skills. Sole workers who perform both ‘head’ and ‘hand’ tasks (Greenbaum, 1994: 64) have emerged. With the introduction of new technology, particularly computers, there has been the opportunity for workers to be responsible for a far greater portion of a whole science project, including data entry and statistical analysis, and the typing up of written reports and papers, which previously would have been performed by specialised workers. Similarly, there is the opportunity for more routine work to be contracted out or be carried out by more automated technology (e.g., polymerase chain reactions (PCRs)). This environment requires workers to continually retrain in order to use new technology or new techniques.

Third, the autonomy allowed to all technical workers, enables them to control and plan their working days, and can counter a sense of alienation. They also have a great commitment to their work and talk of gaining great enjoyment and a sense of achievement from it (as illustrated in Section 5.4).

It is worth noting that the attitude that workers are things, units of production, which employers act on in order to get them to produce what the employer wants, has been adopted by those wishing to colonise the work of science for its commercial possibilities. This was illustrated by the rhetoric used at the International R&D Management Conference 2001. The conference title was *Leveraging Research and Technology*.²¹⁴ The frequent use of the word ‘leveraging’ in the titles of the different sessions implied that somehow, through methods which would be imparted to the conference attendees, products and innovation could be extracted from recalcitrant

²¹³ Pers. comm. Ray Moss, Feb. 2001.

²¹⁴ AgResearch sponsored one of the streams at this conference so was happy to be identified with this rhetoric.

and reluctant scientists! It was also notable that a key-note speaker was the only person I was aware of, to comment on this adversely.²¹⁵

8.6 Compliance: survival by resisting estrangement and alienation

I consider that most scientific workers in AgResearch in the groups I studied have developed ways of complying that enable them to resist the feelings of estrangement and alienation they have experienced as a result of the corporatisation of their public sector organisation. Given that ‘exit’ in the New Zealand context, is not a viable option, they can resist these feelings directly by open challenge, indirectly through compliance by getting on with their work in their own way, or they can become committed to corporatisation so that they no longer feel estranged or alienated. I suggest that these workers are responding to a complex mix described earlier in this chapter. There is no direct and discrete relationship linking scientific workers’ responses to the system of normative control put in place by AgResearch’s corporate management. CRIs are also responding to Government policy and to what is happening in the global world of research, with its emphasis on economics and the development of innovative, profitable, products. It is not only AgResearch which has this emphasis. These are arenas in which scientific workers feel powerless. It is difficult for anyone to feel they have any power over what is happening at a global level. At the Government level, scientific workers have been shut out of the policy making process.²¹⁶ The focus of their discontent therefore, becomes the organisation in which they work (or the CEO) where particular systems of work control have been put in place to achieve organisational goals.

Positioning my work in this way, as part of a ‘chain reaction’ from a specific Government restructuring policy through to the individuals on whom it impacts, is not an approach I found in any literature. Certainly context is apparent in the work of Labour Process writers, but the context is more vaguely set in ‘capitalism’, with normative control just another tool of capitalists (e.g., Knights, Willmott, Smith and Thompson). Other writers just focus on the organisational level (e.g., Ashforth and

²¹⁵ Jack Sommer produced a picture of a lever and pointed out that being the person ‘levered’ may not be a pleasant experience (Sommer, 2001: 1).

²¹⁶ This was confirmed by another source – RSNZ CEO, Steve Thompson, at a meeting of the Canterbury Branch of the Royal Society, 1st March 2002, University of Canterbury, on the topic ‘Why trust a scientist?’

Mael, Casey, Clegg, Hodson, Bate) but in the writing of these four writers there is the spectre of an unnamed power seeking control, haunting the workplace and masked in managerial clothing.

I suggest that employees respond to this normative form of work control in many different ways which can all be seen as resistance aimed at reducing the feelings/experiences of estrangement and alienation induced by this system and the process of corporatisation of which it is part. This goes against much of the literature, which, as I have outlined in Chapter 7, has assumed that managerial systems have become so powerful that resistance to them is hardly possible. Resistance of blue-collar workers is typically used as evidence that alienation exists, offering a way in which workers can exert some control over what they do. However, in the literature this resistance is described in the context of less subtle management systems which are usually forms of direct control rather than consciously normative.

I am suggesting a process of resistance within AgResearch, explicated in Figure 8.1. Scientific workers in AgResearch are experiencing unease. They are having trouble naming/articulating this unease, because the practice of corporatisation is new to them. Further, the constant change and the nature of normative control, make it more difficult to address what is going on. So the patterns of resistance become set – the cynicism and so on – but the focus is on surviving through the change, not on challenging it directly, partly because by the time that happens there will be further change. This makes it difficult to focus on anything definite. For this reason, maintaining one's identity through continuing change (preserving some stability) becomes almost as important as the identity one is trying to preserve. Organisational cynics would say, "Why change to fit the current model the organisation desires, because it too will change? Governments and CEOs come and go, but we stay."²¹⁷

The need to produce products, the need to make a profit, and being a life sciences company, are in fact negotiable policies dependent on governments and company governance (CEO and Board of Directors). The members of the groups responsible for such policy have limited terms in office. Scientists have seen other names for the

²¹⁷ Matching Murray (2000: 47).

company's business come and go. For example, since 1992 they have witnessed the demise of the biotechnology company, and the 'adding value', 'relevance' and 'sustainability' rhetoric. The recent emphasis on product production may move entirely to the AgResearch subsidiary, Celentis. Focusing on making a profit may change if a government places less emphasis on the 'company' side of public sector organisations, as is happening in the health sector and the Television New Zealand (TVNZ) 'charter', for example. The situation I have described both agrees and disagrees with Ashforth and Mael (1998: 105), who contend that those in power in organisations become protected from the impact of their actions as the way they have gained their power becomes "institutionalized and taken for granted". I suggest that this system of control may discourage direct resistance but that does not mean resistance is absent.

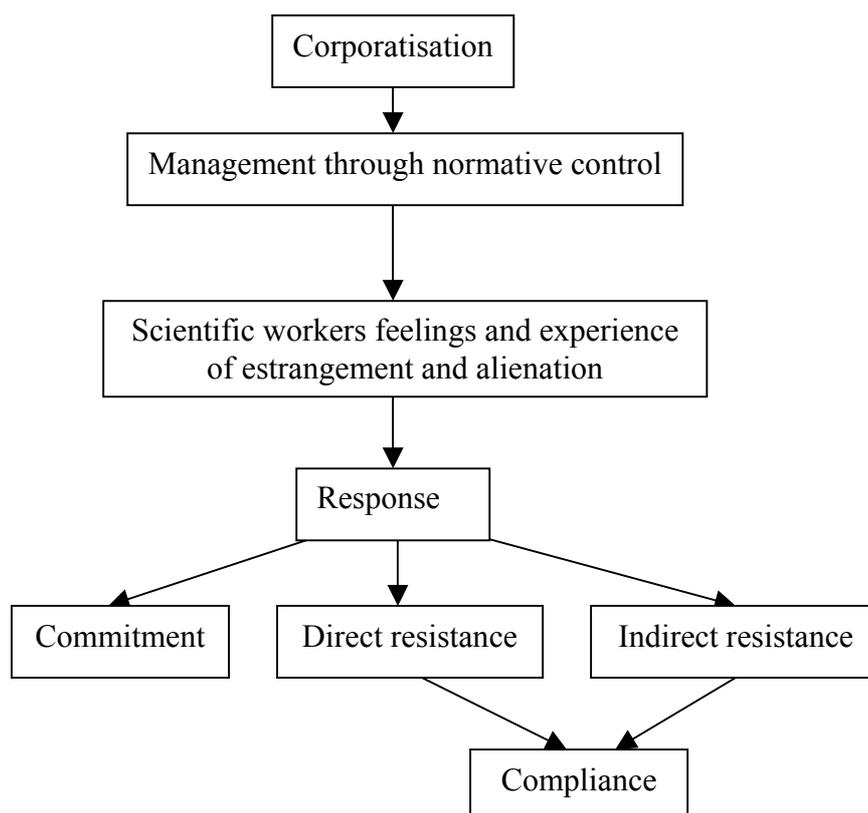


Figure 8.1 The corporatisation process

This thesis is of interest because there is a response by scientific workers to normative control and this response is linked to the way normative control challenges

how workers make their work meaningful. Hence the response is associated with their self-identities. This response also serves the purpose of providing workers with a way of surviving in work. The response is ultimately one of compliance, but the compliance is tempered, as I will demonstrate.

However, before I discuss compliance and models of resistance incorporating compliance, I will first consider the response of ‘commitment’ to organisational norms (see Figure 8.1). This will be brief because most workers in the groups I studied had an attitude of compliance, not commitment.

8.6.1 Commitment to organisational norms

Scientific workers became unhappy in AgResearch because the organisation they worked for changed while many other things stayed the same. Here was a group of people who had worked together, doing the same things, and suddenly they belonged to something else. The situation they found themselves in was different from applying for a job and getting it. The change was visited upon them, not chosen by them. It goes without further comment that new people coming into the organisation may have a different sense of commitment.²¹⁸

One way a worker can resist estrangement is by embracing the rhetoric associated with normative control and taking on the corporate culture as part of their own identity. Such workers will feel as if they belong to the organisation and are committed to its goals. Ackroyd and Thompson (1999: 25) describe this as commitment and engagement.

Only one person among those I studied had acted in order to better understand what was happening in her workplace. A technical worker in the MBU, who wanted to feel a greater understanding of AgResearch, had gone to a business studies course at her local polytechnic in the evenings. Another, a scientist in the MCG, was very happy with the company direction. However, he participated very little in the organisation and worked very hard to solve the particular problem he was challenged

²¹⁸ Ironically, anecdotal evidence suggests that the dominant commitment of new workers to AgResearch and the PhD students funded by FRST scholarships, is still to ‘science’ (pers. comm. staff in AgResearch, and Nicky Murray and Lucy Baragwanath, two ‘Bright Futures’ scholars, June 2002).

by and employed to solve. It might be expected that as scientists became managers, they will become concerned to learn about business and management and will attend courses. In-house management courses were provided for Science Platform Leaders but two told me how they had managed to be otherwise engaged or out of the country whenever these occurred.

Commitment may take different forms at different levels within the organisation. A worker may not completely embrace the management-communicated organisational culture, but may adapt partially, by accepting particular aspects of the organisational rhetoric. Eric, for instance, has been co-opted enough by corporate management to make FRST the ‘enemy’,²¹⁹ rather than corporate management. The reasons for his discontent now lie outside the organisation rather than within it. Commitment will mean giving up the desire to control the product of one’s work because the organisation is now acknowledged as ‘knowing best’.²²⁰

8.6.2 Compliance

I understand compliance at work to mean workers making a practice of conforming to what an organisation wants in order to carry out their work. Compliance does not mean that workers have to ‘embrace’ the identity offered, but that they conform to what the organisation wants in order to do something that is more important to them – something that balances out or rewards them more than the cost of conformity. Compliance implies trying to make work meaningful in such a way that a worker does not experience estrangement even though its causes still exist. Compliance is a way of fighting the possibility of alienation from one’s work, by manipulating the work system in such a way that a worker still has some control over what they do at work, and the rewards that work brings.

The very word ‘compliance’ implies that there is some pay-off for compliance. What is it that AgResearch workers are exchanging for compliance? I have put the case that the pay-off is survival in work, but survival in a way which gives workers control over the meaning that work has for them and the role it plays in their self-

²¹⁹ This also reinforces the importance to this group/Platform of having an ‘other’ to define themselves against to maintain their group identity.

²²⁰ For this reason I have not included commitment in the model of resistance against alienation.

identity. At least, this is what workers hope for when they act in certain ways to achieve these ends.

In AgResearch very few workers would say their work is ‘just a job’. They would like to believe what they do is important and of value to the employer and to society, even if for many it is also a means for them to do other things in their leisure. What they do not comply with is the employer’s perspective on their work and themselves as workers. Obtaining compliance is not a problem as workers are very busy doing their work but are they doing the ‘right’ work for the ‘right’, organisationally relevant, reasons? The way in which corporate has tried to get workers to do the ‘right’ work for the ‘right’ reasons has been viewed as coercive and manipulative. Attempts to separate workers from their reasons for doing the work they do and replace them with other reasons, has had both an estranging and alienating effect. By carrying out their science, scientific workers still achieve what the company wants of them but if they do it for the ‘wrong’ reasons, then they are maintaining some control over it – stamping their own identity on it, unknown to management. When I asked Owen about how he resisted the things he disliked about AgResearch he tapped his head. What goes on in his head, he communicated, is what is the most important and that cannot be touched or influenced.

Achieving compliance by using the techniques I am about to describe is not a ‘happy ending’ story. I was made powerfully aware of this one day when I was expounding my views to one of the members of a science group I had studied. Without consciousness of what he was doing he found the nearest wall and hit his head against it, and almost in tears, said, “But it’s so stressful!” Practising the distancing tactics I will describe, has not been ‘successful’ for most workers. The fact is they are still unhappy, returning me to my original observations of scientific workers as both happy and unhappy.

8.6.3 Constructing models of resistance

I have described earlier how scientific workers are experiencing estrangement, while only scientists are experiencing alienation. I suggest that it is through their resistance to these experiences that they are able to comply and carry on working. Through bringing together my observations, reflections and the thoughts of various writers on

resistance and its related concepts, I have constructed two ‘models’ which help to understand how scientific workers comply sufficiently to do their work and for their employing organisation to continue, while retaining their sense of autonomy. In order to make clear whose ideas contributed to my models and which parts are unique to me, the reader will need to refer to the schematic, simplified versions of the ideas I have taken from different exponents on resistance (Figures 7.1 – 7.5) included in Chapter 7.

It is my idea to draw up models of the resistance process according to the patterns I observed of how scientific workers in AgResearch manage to continue to work while trying to ensure that the meaning of their own work is maintained. Because I have identified that all scientific workers are resisting estrangement but only some, particularly scientists, are resisting alienation, I have produced two models (Figures 8.2 and 8.3). The next two major sections present each model and describe in full the components of each. There is some repetition in these sections because some of the material from Chapter 6 is being reframed.

8.7 Resisting estrangement

I have created a model to describe how workers are able to resist or protect themselves from the experience of estrangement in order to overtly comply with the goals of their employer AgResearch. This model aims to clarify what scientific workers are resisting and why, which is not clear in most models. This section provides justification and explanation of this model, which is schematically summarised in Figure 8.2. Ways of resisting estrangement can range from embracing the corporate culture to leaving the organisation. There were, however, very few workers at these two extremes. Nearly all workers were resisting estrangement. Many of the technical workers were already instrumentalists (in the Goldthorpe sense) in some ways. Still, at work they could counter estrangement by emphasising their group membership and taking a great pride in the skills they brought to their work and in the quality of that work. I did not get the feeling that they were experiencing the same level of distress as scientists, though there was unease among them due to insecurity. Most workers, scientists and technical workers, managed to find a way of resisting in order to comply enough to ensure their survival, at the same

time finding ways that continued to make their work meaningful in a way that reinforced their identities and feeling of value.

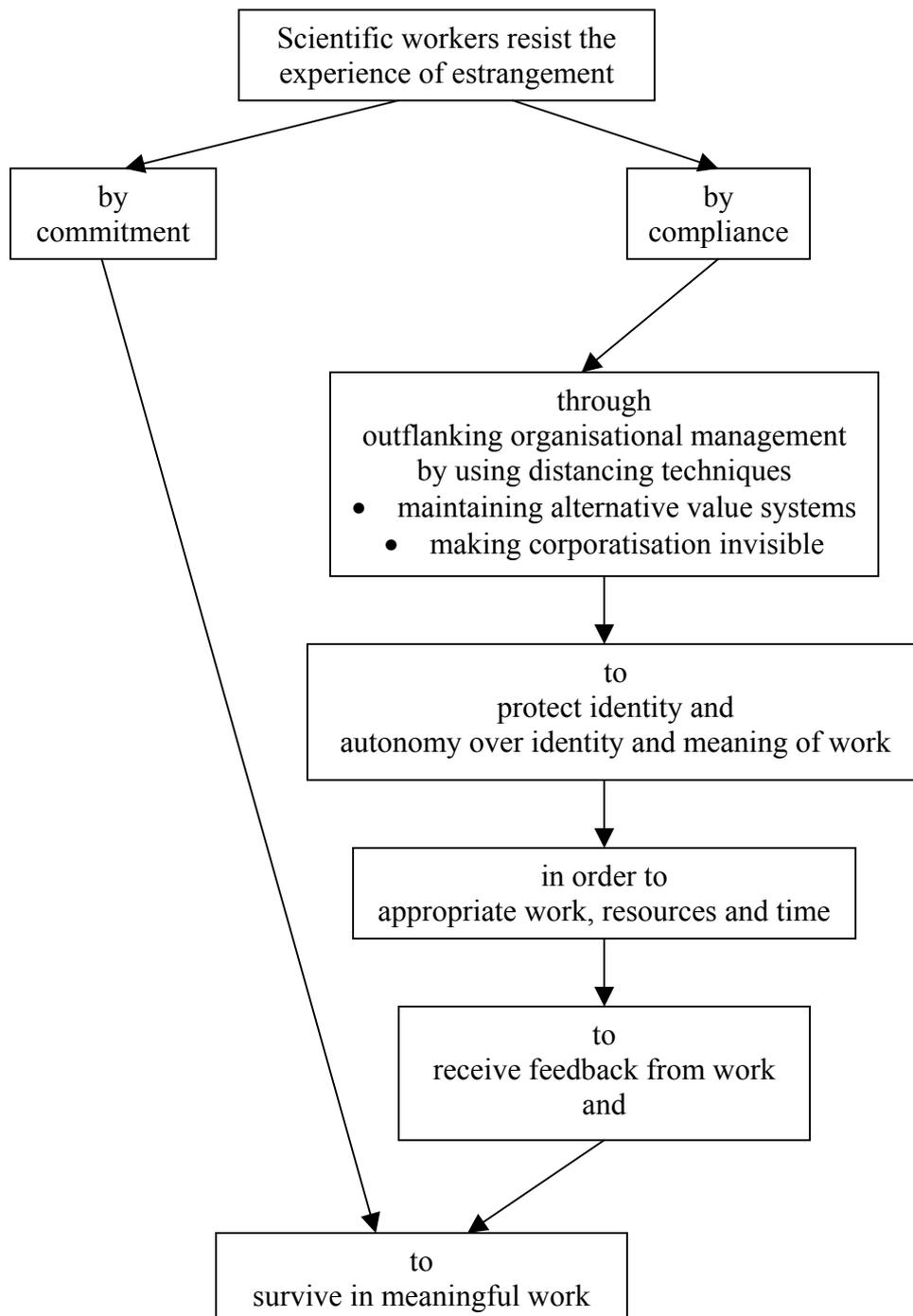


Figure 8.2 Resistance model 1: How scientific workers try to resist estrangement in a system of normative control

This section elaborates on the detail of Figure 8.2, showing how workers can resist estrangement by outflanking or distancing themselves from the system of normative control. They can do this by belonging to entities with alternative value systems (Section 8.7.2) and making themselves and organisational communications invisible (Section 8.7.3). This then means that they are then able to place a greater emphasis on meaningful feedback from their work (Section 8.7.4) and they are able to survive in an uncertain environment (Section 8.7.5).

8.7.1 Distancing/outflanking

At first I was puzzled by how these workers could do the things they did – play the games they did – and still maintain their integrity as people and as scientific workers. I was aware of their use of distancing tactics (Section 6.4) to limit the influence of corporate communications on who they were and the meanings they had for their work. Then I became aware that such tactics played another role. To continue with their work while gaining satisfaction from it required them to use the resources provided by the workplace for their own self-interest rather than the interests of AgResearch and the Government. This challenged their integrity. It made them feel dishonest. Using distancing tactics protected them from this feeling and helped justify the ‘rightness’ of their cause. This behaviour became a way of resisting the appropriation of their identities by their employer (Ackroyd and Thompson, 1999).

From the work of Collinson (1994) and his use of distancing as a technique for resistance, I was able to identify similar ways scientific workers in AgResearch distanced themselves from the company’s strategic direction (and all that involved) and the desired buy-in of workers’ values (see Section 6.4). The work of Cohen and Taylor (1992) added substance to my observations. The resistance typologies of Hodson (1995b) and Clegg (1994) include concepts that could also be described as distancing techniques (see Sections 7.4.4.1 and 7.4.4.2). Hodson has a category called ‘deflecting abuse’. Clegg has ‘strategies for outflanking’, which in his work are described as ways in which employers inhibit resistance, whereas I am turning this meaning on its head by using the words to also describe ways in which workers reduce the impact of employers’ strategies of control.

By using these techniques to distance themselves from corporate strategy, scientific workers are able to establish a boundary between themselves and the organisation, which protects their integrity and self-identity. This allows them to then justify to themselves their appropriation of the public funding, the organisation's resources, and their own time and work, to assert their own autonomy in order to do the work that is meaningful to them.

The label 'deflecting abuse' (Hodson) is rather strong in this context. I had no indications that workers felt abused by the organisation. I suggest there was the potential for abuse as some workers did considerably more work than they were paid for and the organisation profited from this. However, I was also aware that one Science Platform Leader in particular (rather than 'the organisation') did verbally abuse his staff, and this group concocted a story around a possible name of a research programme which deflected the abuse, negated it and revenged it (Hodson, 1995b: 83) by turning it into a story that emphasised their intellectual superiority and private scientific knowledge.

One of Hodson's categories for this concept of 'deflecting abuse' is 'degradation' which I feel is also rather too strong a way to describe some of the experiences of workers.²²¹ A milder interpretation of 'degradation' could be 'not being valued'. Some workers in the MBU noticed how previous managers had conveyed how little they valued them in the way they were introduced to lab visitors (see Section 5.4.4), for example, but they also appreciated how this had changed with a change in manager. Another technical worker talked about being one of the "minions". The staff survey of 1999 indicated how the feeling of workers that they, and the work they did, was not valued by corporate management, was common throughout AgResearch. It could be categorised as abusive, because in seeking to impose a new set of values (a new culture) on workers, management are implying that they are blank slates (Ashforth and Mael, 1998: 99) – that workers have no values and culture of their own and if they do, such values and culture are not worth preserving.

²²¹ Note the confusion here. Hodson has developed the concept of 'deflecting abuse' to describe the ways in which workers are able to resist abusive behaviour on the part of managers. But he then has a sub-category which he calls 'degradation' which is the experience of abusive behaviour, not a way of resisting it.

8.7.2 Alternative value systems

There are many other ways in which workers in AgResearch can feel valued, apart from feeling valued by the organisation. As I have described in Chapter 5, they can be part of strong science teams/groups. Being accepted as contributing to the work of their group is an important part of belonging. For the scientists, membership of the science community is important. Their life apart from work also provides opportunities for many workers to find other ways of being valued. Belonging to any of these different groups provides an ‘alternative value system’, one of the categories developed by Hodson (1995b) within his ‘deflecting abuse’ agenda. The symbolic rejection of organisational and Government policies (ibid.: 84) is one of the common strategies of resisting the experience of estrangement among each group I studied in AgResearch. In Part B, I described how workers produced logical, reasoned, arguments against organisational initiatives and particularly how their values differed from those promoted by the organisation. Such efforts to undermine management are considered to be a first movement towards resistance. Hodson says such “meanings require social affirmation for their continued vitality” (ibid.). (‘Social support’ is another of Hodson’s categories.) This is certainly evidenced in AgResearch by the overall cynicism with which corporate utterances are regarded and the particular culture of groups such as the MCG in which cynicism is very much perpetuated by the scientists. In other groups there was not so much cynicism. Cynicism did not have the ‘required-by-members-to-demonstrate-that-they-are-part-of-the-group’ nature that it did in the MCG. Supporting alternative value systems is related to the maintenance of both group and individual identities.

The next subsections describe other ways of setting up and maintaining alternative value systems – by becoming instrumentalists, by viewing the past as utopia, and by reinforcing these alternatives through social support and support of an ‘us-them’ culture.

8.7.2.1 Protection from estrangement by instrumentalism

There were many technical workers who admitted to me in a rather embarrassed way – as if it was not what they were ‘supposed’ to feel – that they ‘worked to live, not lived to work’. Their ‘alternative value system’ lay outside work, and this was a more dominant source of identity reinforcement. At the same time, most of these

workers also were able to realise some of their potential through their work, both intellectually and socially, as, for example, in being problem-solvers, well organised and relating well to colleagues, and they drew a lot of satisfaction from these sources.

Instrumentalism provides an alternative value system for all workers as it enables them to survive by having something more meaningful to look forward to outside work (see Section 6.3.2). Actions of management to increase the commitment of workers to company goals may actually be countered by scientists through demonstrating their commitment to science (e.g., Bill, Wade, Graham and see Sections 8.8.4 and 8.8.5), or by an increasingly instrumental approach to their work. In the former case, I have described how, for example, scientists who are managers will come back to work at their science outside working hours – working hours being the time they spend on management. In the latter case, scientists still do their work but lose their enthusiasm for it (e.g., Mark, Jack, Dave – Section 8.3.3.1), as Dave (scientist) said, “I won’t be able to change my beliefs sufficiently to get on the bandwagon. I’ll just have to work within the constraints that it offers.” Although their enthusiasm for science continues, some scientists also find their leisure activities important or becoming increasingly important. Some of the technical workers, who feel they are not sufficiently rewarded monetarily, may make sure they work the required hours, no more nor less.

Being an instrumentalist can just mean playing the system in a way to benefit oneself monetarily. It could be a form of resisting the inroads of work or the demands of the company (Ackroyd and Thompson, 1999; Clegg, 1994). Goldthorpe et al. (1970: 38-39) hint that instrumentalism is a way maintaining one’s identity outside of work, in other words, as dissociated from work.²²² Becoming an instrumentalist does not in itself mean becoming a capitalist. However, it does mean supporting the capitalist system by competing with others for personal, individual and family gain, and by subscribing to a wage-effort bargain.

²²² The ‘instrumental orientation’ is characterised by (i) “... work is as a means to an end ... external to the work situation ...” (ii) “... workers’ involvement in the organisation which employs them is primarily a *calculative* one ...” (iii) “[workers’] jobs do not form part of their central life interests ... [work] is not a source of self-realisation.” (iv) “... workers’ lives are sharply dichotomised between work and non-work” (Goldthorpe et al., 1970: 38-39).

8.7.2.2 The past as utopia

Another way of creating an alternative value system is by remembering the golden days of the past. Some workers did hark back to the past and this was symbolised by Colin's (scientist) description of the scientists in the MCG as 'dinosaurs' (see Section 5.2.2). Crozier (1964[1963]: 80) could have been describing AgResearch when he wrote that cultures containing such an 'alternative value system' often include:

an idealization of the past, some pessimism about the present, devaluation of the future, and distrust of management. This pressure, however, has for the individuals also a very positive function, since it safeguards for them an area of personal autonomy to which belong most of the concrete aspects of everyday life.

Perhaps the workers who hark back to 'the good old days' are those who have not managed to make the separation between work and not-work and the only way they still manage to feel valued and important is in terms of their past, not their present. They continually remind themselves of the past in order to keep it real for them – to keep this part of their identity alive.

8.7.2.3 Social Support

Most workers demonstrated strong social support for each other by their regular attendance at morning and afternoon tea breaks. Tea breaks were seen by workers as an important way to keep in touch with what was going on, even if they were not very socially inclined. Workers who did take these breaks would take as long as they liked. This also gave them social solidarity. The organisational directive was that tea breaks should only take 10 minutes. I did not ever see this practised on any of the AgResearch campuses I visited.

When people experience a loss of voice in one arena I suggest that they look for a place where they are heard, where they belong, even if it is just a safe place in which to grizzle! A person usually loses their voice only within a particular discourse and they may be able to express resistance through other discourses. For example, workers may not be able to front up to management or speak in the way management would understand (and in fact they may well be invisible to or discounted by management anyway), but they can still complain to their colleagues at morning tea.

This may not change anything but it may allow them to cope and it is a symbolic action, demonstrating they have not taken on the persona management would like.

8.7.2.4 Reinforcing an us-them culture

Two of the four groups thought in oppositional terms. One wished to keep their separation from senior management clear – to keep up the ‘us-them’ culture. The other had Oliver as their facilitator. With his background as a past Public Service Association (PSA) negotiator for AgResearch employees, Oliver could not help but think in oppositional terms. Management was not to be trusted!

Competition between different groups maintains a group’s distinct identity and solidarity. It can be both overt and covert. Overtly groups compete for funding and resources as if other groups do not exist.²²³ A more covert example of such maintenance of identity is the way in which a dominant group at tea breaks does not openly discourage others from joining it, but the very arrangement of chairs, body language and lack of invitations to join, may do so. One group was particularly proud of its cynical image. It was a ‘hot bed’ of gossip. Its solidarity was emphasised by the tight circle formed at tea breaks and the difficulty this created for others who might have wanted to break in. The size of this gathering emphasised the group’s importance to members and reinforced its status. This behaviour protects workers from estrangement because it enhances their sense of belonging and contributing. Members also experience solidarity (Hodson, 1995b), which strengthens their ability to maintain different opinions and positions from the corporate culture.

As I mentioned in Section 7.4.4.1, Hodson links this concept of ‘deflecting abuse’ with direct control styles of management. I suggest that the examples I have given in the last paragraphs have elements that cast doubt on Hodson’s claim.

²²³ As bidding coordinator of the Sustainable Production Division in 1995-6, I took it upon myself to inform scientific staff of the different funding opportunities that were available. This had a mixed reception from members of one group because they already had a good knowledge of most of these and did not want it to become common knowledge, as their advantage would then be at risk. At the same time I was able to come up with some things they did not know about!

8.7.3 Invisibility

Workers, either intentionally or unintentionally, were able to deal with corporate communications in such a way as to render them ‘invisible’ or rather ‘unheard’.²²⁴ The most overt forms of collective yet unorganised resistance I was aware of would have been non-attendance at corporate-related meetings, such as the team briefs, strategic planning meetings and courses such as ‘Invitation to Innovation’ (I2I). Another form of ‘non-attendance’ was by not reading any corporate communications delivered via email or hard copy. There were large groups of workers in AgResearch who practised this ‘non-attendance’. This may sound extreme but it was in fact almost *de rigueur* for technical workers in all groups except the W&S and Farm Systems Groups on the Lincoln campus.²²⁵ This could be seen both as direct resistance and as a way of managing compliance, because it is also a way of distancing oneself from situations in which one could be exposed to company rhetoric and perceived indoctrination. These workers could not see that there would be anything in it for them except time away from work, when work was what they preferred to be doing. Meetings were not work. This view was even reinforced by the CEO who after a meeting one day (as I described in Chapter 6) told the workers present, “You can go back to work now”. There was never any desire expressed by workers to use such meetings as a way of getting off work. They saw their work as still there and time at meetings would mean they had to make it up by working harder or longer. In these groups it was mainly the scientists who went to such meetings, and who then had to develop other techniques for resistance.

Others were physically distanced from where organisational meetings took place. This obviously was not an intentional distancing tactic but it did mean that to attend organisational meetings required a special effort and took more time. It was easier not to go (see Section 6.4.1).

²²⁴ This is my addition to Clegg’s ‘outflanking’ concept.

²²⁵ Is this just an efficient division of labour? On the Lincoln campus there was an expectation that everyone should go to these meetings. (There were emails sent out suggesting that staff attend and put on a good showing for corporate management.) In contrast, the SPL of one of the other Platforms, based on another campus, consciously protected his staff from some of the corporate communications by attending such meetings himself and only passing on the information he felt was necessary. The latter situation could be seen as a division of labour. However, all workers had access to email and the intranet.

Another way in which corporate communication could be desensitised was by treating it as ‘information’ just like that found in a scientific paper, for example. In this way it produced less of a challenge to a mind that was already made up or it could be argued about without emotional engagement (see Sections 6.4.3 to 6.4.5).

Technical workers also tried to keep themselves invisible. “Keep your head down,” was a common piece of advice, even from technical workers who kept themselves informed but never spoke at organisational meetings. Similarly ‘listening up’ can mean ‘hearing’ but not participating in the fullest sense of making a contribution. As I have said, the W&S Group nearly always had full attendance at organisational meetings. These workers whose jobs were most at risk were those eager to find out how to ensure their continuing employment. Attendance was a way for them to work out how to comply.

Scientists, compared with technical workers, did not make themselves invisible. The scientists in the MCG in particular, attended all the organisational meetings, and the male scientists always spoke. They acted at all times as if the organisation was an audience to what they do, by having a strong ‘us-them’ ethos. For the ‘us’ to exist the ‘them’ has to exist too.

Scientific workers in AgResearch actually resisted chances to participate rather than welcomed them. When the new CEO came to AgResearch in 1997, he said he wanted worker participation in the production of the strategic plan. Workers were very suspicious,²²⁶ and these suspicions turned out to be well grounded. The CEO decided the agenda for the participation and it excluded the organisation’s direction/strategy and the science to be carried out by the organisation, the main interests of scientific workers. The Strategic Plan also stated AgResearch wanted to be the ‘employer of choice’ (AgResearch, 1997b) at a time when scientific workers were feeling increasingly insecure, further increasing their cynicism. The result was that very few workers participated in the strategic planning process. This lack of participation could be viewed as resistance. Workers did not think their contribution would be heard, let alone incorporated. A group culture operated which implied that

²²⁶ In Chapter 2, I discussed my reaction, as a staff member, to this invitation to participate.

if one was seen to be cooperating with company rhetoric, one risked exclusion from the social side of one's work group. The group agenda and the culture within the group that supports it may be more powerful and/or compete with the company culture. Workers are likely to feel much more strongly about belonging to their work group than to the company.

Some of these responses are documented in the literature. Jackall (1978: 142) and Schrank (1983) have described how workers were suspicious and cautious about managerial suggestions of increased participation. The examples above counter Hodson's (1995b: 100) final agenda of resistance, 'empowerment through participation', in which he suggests that greater participation of workers could result in more, not less, criticism of management in situations where management could be considered to be restricting production rather than enhancing it.²²⁷ Workers in AgResearch obviously did not see the possibility of participation as providing such potential to influence management.

8.7.4 Feedback from work

As I mentioned earlier, one way of sustaining identity against conflicting claims is to turn to feedback from a source better fitted to a valued identity. I illustrated in Chapter 5 how feedback from the practice of science is a very dominant source of satisfaction and value for scientific workers. I will not repeat it in this section except to make a few additional points which have occurred to me since reading more of the resistance literature.

Scientific workers were able to increase positive feedback from their work by learning new skills. The assumption is that learning new skills and gaining new equipment which requires the use of new skills, is tied into more efficient work practice, thus saving the organisation money. The push for and the adoption of a new technique or new equipment, however, may not be tied into this economic meaning of efficiency at all. Apart from the fact that it may actually cost more, it may make work more interesting to scientific workers by removing the tedious, routine and

²²⁷ It is important to note here that participative management as such has not happened in AgResearch and so what I am talking about are equivalent examples that have happened in spite of management initiatives, not because of them.

repetitive aspects, and by contributing to further and faster progress in a particular area of research. It could give the technical workers who are using it more power and status within AgResearch and the scientists they work for more power and status within the scientific community, and make everyone's work more satisfying.

Similarly, when technical workers expressed a concern about getting more 'training', it was not of the type that the company-employed trainer provided.²²⁸ Workers wanted 'training' that developed their science-based skills. This desire was as much based on self-interest as organisational interest. It means workers can do more interesting work, get promoted or find other work more easily. An organisation can capitalise on this self-interest but not control it.

The next subsections explain how workers can gain more feedback from their work by doing more work, being innovative and efficient in their use of resources and taking ownership of their work so that they can take pride in how well they do it.

8.7.4.1 (Mis)appropriation of time in order to 'do science'

Hodson's (1995b) agenda, 'regulating the amount of work', aligns with Ackroyd and Thompson's (1999: 25-28) 'appropriation of work, resources and time'. Resistance in this area is usually described in terms of workers finding ways to do less work or doing things at work that are *not* work (Mars, 1982; Ackroyd and Thompson, 1999). Roy (1969), for example, described such behaviour, as 'making out'. He described the ways workers found to achieve bonuses without doing more work than necessary. This protected them from the risk of job loss or from the levels of product output being increased without a corresponding increase in pay. Turning Hodson's 'restriction of output' category (Hodson, 1995b: 90) on its head, I see workers actually increasing their output. The point I am arguing is that this 'making of more time' is not done in order for the company to better achieve its goals but for the scientific workers to achieve *theirs* - to do the work of science, thereby protecting their identity from appropriation by their employer (Ackroyd and Thompson, 1999: 25). The fact that the result of the work may coincide in achieving both the goals of the company and the worker is fortunate for the company but the company has no

²²⁸ This trainer was more likely to run courses which taught staff 'soft' skills.

way of identifying the reasons why workers act in this way and cannot consciously plan for it.

By failing to separate identification with ‘work activity’ from identification with ‘employers’, Ackroyd and Thompson confuse important distinctions re. scientific workers. (For a fuller discussion of this see Section 7.4.4.4.) Scientific workers in AgResearch identify strongly with their work but not with their employing organisation. For example, ‘alternative procedures’ (Hodson, 1995b: 89), which I call ‘innovations on the job’, have been incorporated into work practice because they save time and resources and so allow workers to do more in the same time (rather than less and have a rest), and to do more interesting activities rather than routine work. Similarly, as workers embrace new technology, or send work out to other agencies (e.g., DNA typing), they are then able to concentrate on the more interesting parts of their work. Most workers did not take their full holidays and management tried to encourage them to do so because of the impact this had on ‘the books’ if too much leave was piled up. Management countered this tendency by deciding on a maximum number of days of leave that could be stored up at any one time.²²⁹

The distinction needs to be made between unpaid and paid work.²³⁰ Though my interest is only in paid work, many of the workers in my study would claim to do a considerable amount of work outside their paid hours of employment. As recipients of a salary, this used to mean that workers were trusted to do their work without ‘clocking in and out’ as wage workers were required to do. However, with the implementation of timesheets, there is the implicit message that AgResearch scientific workers too are tied to certain hours of work for their pay. When they work more hours than required on their timesheet, workers are able to take ‘time in lieu’ because they are not paid for overtime. An accountability requirement has had the unintended consequence of forcing workers to take a more instrumentalist approach to their work. (That this was against the company’s intent was indicated by the CEO. He said that he would like to see workers so excited about their work that they

²²⁹ Of course, not taking enough leave is an issue for occupational safety and health, not that this aspect ever seems to be mentioned.

²³⁰ This has been of increasing interest in feminist debates about work, e.g., Waring (1988) *Counting for nothing: What women value and what men think they are worth*, Allen (1997), Cockburn (1999a, 1999b, 1994).

virtually lived at the workplace as they did in Silicon Valley and the 3M company, for example. He learned this on his visit there with a selected group of AgResearch managers in 1999.)

One of the less passive acts of resistance which could be loosely classified under Hodson's (1995b) 'computer vulnerabilities' category²³¹ within his concept of 'regulating the amount of work', is the response to timesheets, which has only become possible through their computerisation. (Though I have discussed this in Section 6.5.1, this paragraph takes that discussion further.) Many workers saw the keeping of time use records as a waste of time and by their using the 'average day' entry facility the timesheet, as a means of control of working hours and as an accounting record, was rendered useless.²³² It is also interesting to note that this is something that many workers just 'did'. To my knowledge, there was no discussion of it. In one Platform, the SPL's Personal Assistant actually completed these timesheets for workers who were not prepared to learn how to complete them for themselves, and a similar thing happened in another group in which another woman took on this task of 'helping the men with their housekeeping tasks'.²³³ (This response also reduced the impact of the men's protest or protected them against a possible management response.) The timesheets were also something that 'had to be done'. There were requests each month on the email reminding workers to complete them, but there was never any indication of concern about *how* they were completed. I could not work out why workers did not record 'thinking time', extra hours worked and so on, which was 'out of work' time, and may have had an interesting impact on the system! On the other hand, no-one ever received any feedback at all from their timesheets and they seemed to be used by the accountants as a record for annual leave and sick leave only. This also provoked a certain degree of cynicism.

8.7.4.2 Using innovation and efficiency to do more science

At the beginning of this research I wanted to present scientific workers as innovative and creative because AgResearch and Government policy were promoting these as

²³¹ Hodson (1995: 92) uses this category to describe sabotage attempts through the use of computers.

²³² Foucault was concerned how the desire to measure everything was a way of controlling and exerting power in society (Rabinow, 1994: 19-20; Smart, 1985: 106). This is a simple example of how such a system can be sabotaged and without increasing surveillance, which Foucault saw as inevitable (and the consequences of that), it is unlikely to be changed.

²³³ Hochschild (1983) makes reference to organisations needing mothers.

desired qualities for ‘knowledge workers’. I knew from my experience of scientific workers that they were already innovative in their everyday working lives. I was confused by the organisation’s promotion of innovation as it seemed to indicate that the organisation was unaware or did not appreciate this quality of their workers. Then I realised, after talking to Gil Simpson (Jade Corporation and President of the Royal Society of New Zealand),²³⁴ that the examples I have of innovation are not recognised as such by the organisation or by people like him, because for them innovation means creating something new that makes money.²³⁵ Therefore the innovation and creativity I have described in Chapter 5 could be considered a form of misbehaviour (Ackroyd and Thompson, 1999). It is a way workers can do more of the work they love, by improving their own working conditions.

It pays a group to be more efficient in its uses of resources because it can do more science for the same money. This does not necessarily lead to the company making more profit. For example, Rae developed a way of doing two PCRs per sheet. Ivan developed more efficient ordering and buying systems. A similar innovation is the way in which molecular biology protocols are changed and developed by technical workers (described in Chapter 5). Todd developed measuring equipment which enabled him to do his work more efficiently to free up time for work more interesting to him (also described in Chapter 5). Because profit is taken out of budgets before the operating costs, savings go into the group rather than the organisation as a whole. Though these innovations do not reward workers financially, workers obtain other rewards from them. Such innovations are invisible to senior management, and frequently to line managers. Thus innovations could be regarded as a form of ‘making out’ (Roy, 1969), or ‘appropriation’ (Ackroyd and Thompson, 1999).

8.7.4.3 Resistance by taking ownership of work

‘Doing more science’ is a way of asserting ones identity as a scientific worker. The protection of identity becomes a way of resisting estrangement. Hodson (1995b: 95) asserts that when workers take pride in their work, creating their own standards by working autonomously and taking personally their successes and failures, then this is

²³⁴ Pers. comm. 3-6-01.

²³⁵ According to Simpson and Craig (1997: 71) science innovation means the production of new knowledge.

a form of resistance. This type of ‘craft autonomy’ (ibid.)²³⁶ is very strong in AgResearch as demonstrated by earlier examples (see Section 5.4). It was very much part of workers’ identities. There is evidence too that the idea of working hard and doing your best – the Protestant ethic in disguise²³⁷ – are prominent reasons for work satisfaction. Eric said that he knows of no-one in his Platform who does not work hard. Some workers felt that the harder they worked, the longer the hours they put in, the more satisfaction they felt. It is worth noting that for technical workers, this may have nothing to do with the need for the work that is being done. Fred (technical worker) talked of how he had been asked by his manager to pay less attention to the finer detail and presentation of work for preliminary reports but his personal standards were so high he had not been able to comply.

All the technical workers in the study wanted to do things well and on time. The workers own these values and they feel good about adhering to them; they are not ‘caused’ or ‘owned’ by the company, but the company hires someone with these attributes and provides the environment in which they can be exercised in order to profit from them. Workers do not use their skills to please the company but to gain satisfaction themselves and some of this satisfaction may come from pleasing the company. However, workers in AgResearch complained that they would never know if this was so or not because of the lack of feedback.

The work of the groups I studied in AgResearch carries on because of the motivations of the workers, not the company’s motivations, and from their desire to fulfil those motivations and maintain their associated identity. Workers appropriate funding, resources and time, in order to assert their autonomy over the control of work in a way that makes it meaningful to them, and reinforce and maintain their self-identity. Trying to change *why* workers do the work they do is (according to my observations) likely to affect their motivation and enthusiasm and turn them into instrumental workers, who start looking for satisfaction elsewhere in their lives rather than at work.

²³⁶ Hodson (1995b: 95) distinguishes between ‘craft control’ and ‘pride in work’.

²³⁷ In other words, not as a way to get the reward of ‘heaven’.

8.7.5 Survival as resistance to estrangement

If creating insecurity is a management tactic, then survival could be seen as a form of resistance. Judging by the common response to the question, “How are you?” of, “I must be doing something right because I’m still here,” survival is a form of feedback. Given the lack of feedback, workers have to interpret all that happens to them as having some important meaning. Survival can also be perceived as an indication of outflanking management because there is the assumption that management are always looking for a reason to make someone redundant. Those who refuse promotion to a higher management position are indicating their wish to continue their work in science rather than serve the organisation in this way. They do not perceive promotion to management as a reward for good work – a point some senior managers do not seem to grasp. Management ideas change, but workers remain (Ackroyd and Thompson, 1999: 161).

In AgResearch the MCG, for instance, has survived and grown through many management changes, and so it has the understanding that it will continue to do so. Its very survival and growth is an indication that management strategies do not work and demonstrates resistance to them.²³⁸ It has been able to carry on researching a biocontrol for grass grub²³⁹ with a singular lack of success in producing a commercially viable product, until 2001 when a very talented formulation chemist made a breakthrough in this area. This illustrates the inconsistency of FRST policy as it actually rewarded scientists who did not solve an agricultural problem by continuing their funding in the hope that the problem would be solved in the future. Those scientists who were aware of this made their programmes spin out as long as possible. Those who did not do this discovered that their funding was reduced and they faced redundancy unless they could think of something else to research.

²³⁸ It is interesting to contrast this with Hirschman’s (1970) views of ‘exit, voice and loyalty’ in the public sector (pp. 104-5). He implies that people who stay are loyal in a different way – they hope by staying (or leaving) that they can make things better. I think the MCG ‘stay’ because the workers have an awareness of ‘this too will pass’. It does not mean they have developed a loyalty of any sort to the organisation itself.

²³⁹ It was in 1981 that this group discovered the bacterial disease used as a biocontrol for grass grub, which they are still working on (Hunt, 1998).

8.7.6 Resisting estrangement: model summary

I have drawn together the ideas of many writers and incorporated them with my own to produce a model of how workers resist estrangement. Workers ‘sustain valued identities’ (Ashforth and Mael) by distancing themselves (Goffman, Cohen and Taylor) in order to ‘outflank’ (Clegg) their employer. This enables them to appropriate resources, time, materials and work (Ackroyd and Thompson) to get on doing work of science for their own reasons while preserving their integrity.

Thus this model not only brings those of other writers into an integrated whole, but it also challenges and extends the meanings some of these writers have ascribed to their concepts. I have used Clegg’s ‘outflanking’ concept to describe a worker strategy as well as an employer strategy. I have separated out Ackroyd and Thompsons’ appropriation of work and appropriation of identity. And, I have suggested that doing *more* work can also be a resistance tactic because it enhances the scientific aspect of a worker’s identity.

8.8 Resisting alienation

Scientific workers, mainly scientists, resisted the experience of alienation by using distancing techniques in ways that protected their integrity so that they could attempt to take control of their work in order to make it most meaningful to them. For some, particularly those in the MCG, and some in the E-Group, this resistance is quite successful, as they have managed to maintain control over the products of their work. Some of the scientists in the MCG fit the description ‘cynical traders’ I ventured earlier (Section 7.4.5.1). They are quite proud of their cynical image and how successful they are at playing the system. However, most scientists remain unhappy and are seeking to make their meaning in different ways by resisting alienation, sometimes in relation to their work (e.g., Rae who is incorporating ‘managing’ into a worthwhile skill), and sometimes in relation to their use of leisure. This section describes and explains the second model of the resistance process, which summarises how scientists resist alienation (see Figure 8.3).

On some rare occasions, scientists seized opportunities to directly resist and I consider these first. The question also needs to be asked, why were there so few examples of such direct resistance if scientists are so unhappy and concerned about

the future of science? In the second subsection (8.8.2), I suggest reasons for that, before moving on (8.8.3) to examine how compliance was achieved by using distancing techniques which protected scientists' sense of themselves as decent and honest workers, doing something for others, the environment and science by carrying out scientific work. The following subsections, 8.8.4 and 8.8.5, then explain how distancing enabled scientists to appropriate work to 'do science' and how this protected them against the appropriation of their identities by their employer.

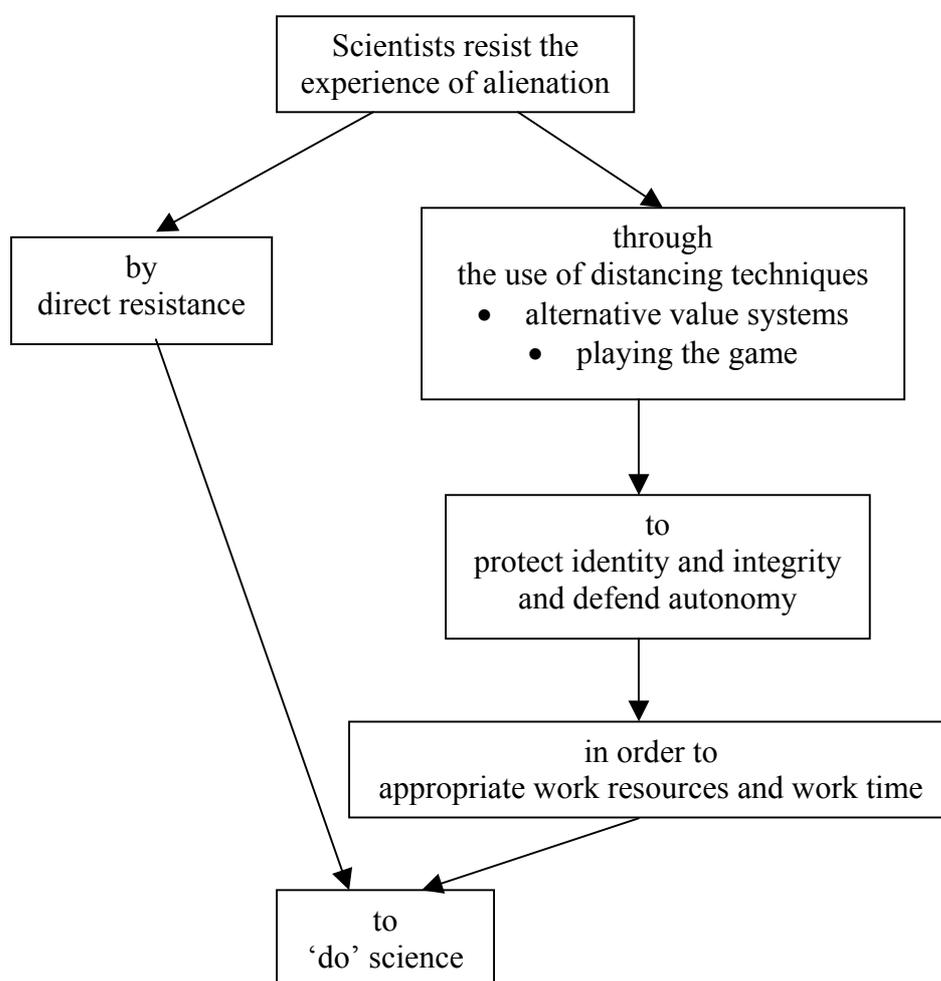


Figure 8.3 Resistance model 2: How scientists try to resist alienation in a system of normative control

8.8.1 Direct resistance

Some scientists actively managed corporate management (Collinson, 1992) in order to assert some control over their work. For instance, Jim (SPL) was concerned to present his case to the Board and senior management in order to ‘educate’ them about the process of molecular biology and its likely time frame; Colin (scientist) contacted anyone in corporate he felt needed to be informed of something; Rosie (scientist) worked hard to introduce and maintain collaboration across Platforms; and Dean (scientist) constantly tried to communicate with his SPL. These scientists tried hard to think of management in collegial terms rather than as the opposition. They could be seen to be ‘managing management’.

Others challenged the accountability culture. As scientists rose to management positions, they had to respond to more and more requests from corporate for reports. Noel (scientist) did not do anything asked of him by corporate unless he was told why and it was backed up by his line manager as needing to be done. Wade (scientist) was not prepared to do things asked of him unless he was asked several times. Frequently he found there was never a follow-up request. These examples demonstrate individual overt resistance. These acts, however, were not intended to change anyone or anything but rather to enable Noel and Wade to spend their time in ways they considered more important. These are not examples of organised resistance. I was not aware of either Noel or Wade exhorting others to behave in the same manner.

8.8.2 Why is there not more collective resistance?

If scientists are so unhappy about the scene in which they work, why don’t they ‘organise’ themselves to do something about it? Like me, Brian Easton has been perplexed by this apparent passivity of scientists. He used a very picturesque simile to describe them, likening them to possums, mesmerised by the lights of the car coming towards them and taking no action.²⁴⁰ Direct resistance has connotations of collective and organised responses to work control and the form considered most direct is that of strike action (Karlsson, 1995).²⁴¹ A strike demonstrates conscious, open, directed and acted upon resistance. In AgResearch there was very little

²⁴⁰ Pers. comm. 30-5-00.

²⁴¹ For some writers this is the only ‘proper’ form of resistance (see Nord and Jermier, 1994).

indication of individual workers being involved in direct action in order to change their situation or AgResearch. They have not yet gone ‘on strike’ or taken any sort of industrial action. They do not have enough group solidarity or their solidarities are so cross-cutting that this is unable to happen. They are still ‘old fashioned’ professionals in the sense of traditional ‘white-collar’ workers who see strike action as uncouth and ‘working class’, but not in the sense of workers whose market situation makes industrial action unnecessary (Lockwood, 1958). There is no thought of them banding together to get something they want.²⁴² Most resistance to the employer remains covert.

Most resistance in AgResearch is “diffuse” (Ashforth and Mael, 1998: 99) and does not threaten organisational persistence. Such resistance does not have to be dealt with and causes no disruption. If scientific workers were really concerned about science and not themselves, then they would do something that meant the changes they are against could not continue. By acting the way they do, policy and its implementation roll on. Because “diffuse resistance facilitates “secondary adjustment” (Goffman, 1961a) – that is, accommodation to an otherwise objectionable status quo; the irony, of course, is that an act of resistance may actually facilitate that which is resisted” (Ashforth and Mael, 1998: 100).

Typically, collective action is regarded as the way to deal with workplace problems, on the assumption that “individually we are weak; collectively we are strong”. Within a system of normative control, one reason why it is very difficult for workers to address any issues they may have about company goals is because any open challenge would be seen as an indication of lack of loyalty to the organisation. The challenger is seen not to belong or fit with Government policy. It is very difficult to get any collective overt response from workers, as no-one is prepared to be the one to initiate such a movement, and workers who have spoken out in the past have not been supported by colleagues (e.g., Bert, Ted). The implementation of organisational goals can only be ‘worked on’ or resisted in the ways that I describe from my observations in AgResearch. These are the only ways that protect how one thinks and

²⁴² Raelin (1991: 105) writes about resistance and the ‘cosmopolitan’. He sees such professionals as not being ‘socialised’ enough to participate in the workforce and calls it a “problem of autonomy”. People who are strongly autonomous are likely to work less well with others.

feels. This in itself is a very individual phenomenon. This ‘individuation’ effect of normative control combined with the autonomy of the science culture, works against a collective response and is part of its power in a CRI setting.

In AgResearch there is an informal alliance between workers, such as the culture of cynicism, through which workers’ beliefs about the environment in which they work can be shared. There is evidence that this happens all around the world - when scientists meet, they compare notes. AgResearch workers *do* receive support for their resistance; however, it is still uncoordinated and unorganised. The fact that scientists do not organise themselves collectively indicates that this would not serve their purposes. They have developed a way of complying which enables their work to continue, whereas if they practised outright direct resistance it would threaten their work, whether or not they have made this ‘calculation’ explicit.

I summarise here further ways in which scientists’ ability to resist is ‘outflanked’. Firstly, there are few systems which scientists could access to support their actions for change. Secondly, ‘playing the game’ manufactures consent to the system and environment in which research is carried out. Thirdly, scientists feel ambivalence towards their employer who after all, enables them to work, and fourthly, the autonomy of the scientific community mitigates against collective action.

In this section I have considered reasons why scientists do not directly resist the work systems of their employer in order to take control of their work. I now move on to consider how they resist in indirect ways in order to comply, and so are able to carry on with their valued work of science and the maintenance of their identities as scientists. I will argue that in order to try to resist alienation and gain some control over their work, scientists have appropriated the resources and the time paid for by their employing organisation, to do the science they wished to do. This satisfied their reasons for doing their work and reinforced their identity as scientists. To do this they have protected this identity from organisational encroachment by using particular distancing techniques which resisted alienation.

8.8.3 Distancing to protect integrity/identity

This subsection explains the ways in which scientists also use distancing techniques to resist alienation, but these techniques have subtle differences from those used to resist estrangement. I first consider the qualities of the alternative value system, the scientific community, which legitimates scientists' control over their work. Then I consider how 'playing the funding game' acts to distance scientists from the reality of this game, which requires them to present their proposed research in ways that may not be exactly truthful but which match company and Government goals. Both these examples demonstrate how scientists try to protect their integrity and identities from the actions they have to make to remain in work.

8.8.3.1 Alternative value systems

The culture of work in all the groups I studied was dominated by science and its rhetoric; work was to be recognised by scientific excellence, not by company recognition. Such attitudes reinforced the solidarity²⁴³ of scientific workers against company strategy. This is by far the most important and dominant alternative value system and I will be discussing it in more detail later (Section 8.8.4), where I illustrate how scientific workers appropriate the whole system of work to 'do science'. By representing a different community to which scientists can belong, the science community sets up an alternative value system in which scientists can overcome alienation. It provides them with a place where their contribution is valued (hence resisting estrangement), and a community which puts them 'in charge' of what they produce and how it is produced (hence resisting alienation). It is a community which respects their autonomy. The risk of being part of such an alternative culture, however, is that workers lose their 'voice' in the corporate, organisational system.

One way of developing or asserting an alternative value system is by arguing against the present corporate one. This is not difficult for scientific workers as I have already illustrated (Section 6.4), as arguing seems to come naturally! Some scientists in AgResearch (e.g., Wade) felt that their own approach to decision making was rational and objective in the scientific sense, while they viewed management actions

²⁴³ Another of Hodson's categories within the 'regulation of the amount of work' agenda.

as irrational. They used rationality as a means of distancing themselves and resisting the organisational strategic direction rhetoric. At the same time, corporate management saw what it was doing as a rational way of responding to the present environment and felt that this was so obvious that it required no explanation.²⁴⁴ My findings assert that people do take actions for “traditional and emotional reasons” (Grint, 1991: 108), and that much of the meaning of work for these workers is of this nature. On the other hand, the organisation, by acting as if “every area of human relationships is subject to calculation and administration” (Abercrombie et al., 1988: 268), is imposing on its workers a rationale for them doing the work that they do, with which they, as workers, disagree. They indicate this disagreement by rationally arguing against corporate strategy, such as presenting AgResearch as a life sciences company, because that would put AgResearch alongside such companies as Monsanto. One scientist told me that Monsanto is about killing things whereas they are about keeping things alive.²⁴⁵ The life science company concept goes against the very meanings some scientists have ascribed to their work. Nearly all the workers I interviewed talked about their love of their work. This indicates they are not, in fact, the rational beings they think they are, in the scientific sense.

Cynicism is regarded by some science groups as a valued attribute for workers to exhibit. Euan, Graham, Walter and Wade exemplify this point of view. Being ‘resistant subjects’ is part of some workers’ image/identity and they seek to make it a dominant part of the culture on their campus (e.g., Graham, Euan, Wade, Walter and Matt at Lincoln, Owen at Grasslands). The attribute of scepticism is one which has always been seen as a valuable quality for a scientist to possess. It was part of the objective approach of ‘organised scepticism’ that the scientific method brought to research (Merton, 1973). I suspect that for many scientists, the move from scepticism to cynicism has been an easy one!²⁴⁶ This tool of cynicism can be used in many different ways. That the cynicism towards AgResearch is intentional is given substance by some of the things scientists say about the organisation and its

²⁴⁴ The non-negotiability of the strategic direction of AgResearch and the presentation of the world’s economic environment as information rather than as material for discussion /negotiation illustrate this.

²⁴⁵ It would seem that killing pests as part of a biocontrol method is seen as acceptable!

²⁴⁶ Hochschild (1983: 50) makes a footnote about how scientific writing “is an extension of institutional control over feeling ... In order to seem scientific, writers obey conventions that inhibit emotional involvement. There is a purpose in such “poor” writing.”

management. Cynicism has also enabled the scientists in the MCG in particular, to see themselves as different and superior – as scientists who have higher concerns than the company or business. They are concerned about ‘science’ and ‘the environment’ (matching Knights and Willmott, 1999: 83).

8.8.3.2 Playing the game²⁴⁷

All scientists, and particularly group leaders, play the funding game in order to gain the money they require to do their work. As I have outlined in ‘Sheep as object’ (Hunt, 2002b – see Appendix C) they learn the language required in funding applications in order to satisfy the Government’s need for accountability. That this is seen as a game is illustrated by the laughter that accompanies any talk about it. But it is also a competitive game with groups not sharing their tactics. It is seen as something of a lottery – another ‘game’ - with little feedback on what it is exactly that has been done right, success being the sole measure. By allocating research funds across different categories according to the number of applications submitted, some funds, such as the Marsden Fund, indicate that the fund managers see it in that light also.²⁴⁸ Some groups make many applications in the belief that this increases their chances of success. AgResearch limited applications for FRST funding in the past, giving it more control over the selection of programmes rather than leaving this to FRST. Potential funding was also controlled by audit trail requirements.

Gareth fully engages with the changes in funding system and exploits them to the full (plays the game) but remains cynical and distant from it. He has adapted to the context of his work and claims the skill he has in ‘playing the game’ as part of his work. In a sense he is committed to the game and as a game it includes cynicism and a desire to get back at the system by exploiting it, while at the same time getting enough for himself and others to do the work he loves. By being committed to it as a ‘game’, he does not see it as a reality and so in his own eyes maintains his integrity and self-identity. This behaviour could be seen as “self-conscious reinvestment” (Cohen and Taylor, 1992: 61).

²⁴⁷ Willmott (1993: 537-8).

²⁴⁸ It is difficult not to when the percentage of applications funded is so low. 10.7% of applications were awarded Marsden funding in 2002. (Information retrieved on 14-10-02 from www.rsnz.govt.nz/funding/marsden_fund/awards_2002.php.)

As an example of a ‘weak form of skill’ (related to the individual) (Littler, 1982b: 9-10), Gareth’s skill of bid writing is one that he has strategically claimed. It gives him great power within his group. The group’s success is probably dependent on it. At the same time, it is not recognised as a scientific skill and some feel it is one scientists should not be expected to have (e.g., Colin). Gareth’s skill enables him to have greater control over the research product of his group allowing him to be more successful in the competition for funding, against other groups within AgResearch and outside it. This is in keeping with the observations of Sturdy et al. (1992a: 2-3):

capitalist production relations [are] actively reproduced, but as workers get ‘lost’ in the ‘game’, hierarchical conflict is diffused. It is either laterally diverted into competition and conflict with fellow workers, expressed within the rules of the game, or tolerated by management in return for overall worker consent.

Workers are now required to play the same game within the organisation by justifying on their performance appraisal form how their work fits the company strategy (as described in Section 5.5.3.1). These distancing techniques – the commitment to the values of science, and playing the funding “game” - enable scientific workers to get on with doing ‘their science’ in their own way.

8.8.4 Appropriation of features of work in order to ‘do science’²⁴⁹

Just as work can be appropriated to resist estrangement, scientists can also appropriate work to resist alienation. The act of appropriation of work for their own purposes against those of the organisation and Government policy, challenges scientists’ integrity, so they have to practise the distancing tactics just described in order to do it. Scientists basically oversee how time is spent by technical workers as well as having choices about how to spend their own time (8.8.4.1). They also make choices about how funding is to be spent (8.8.4.2).

8.8.4.1 (Mis)appropriation of time

In AgResearch, the practice of being “booked in to one job while working on another” (Edwards, 1988: 190) is quite prevalent. Gaye and Walter told me how they give priority to completing commercial contracts over FRST ones. Scobie (2001) describes how time was initially taken from other programmes (FRST and

²⁴⁹ Note that for technical workers, ‘doing science’ may be a way of resisting estrangement while for scientists it can be a way of resisting both estrangement and alienation.

commercial) to pursue the ethical sheep project. Timesheets have designated labels only for time spent on actual programmes, not for preparation time for future ones. It was a subject of gossip that one group frequently did work ahead of bidding for it. Part of the problem for scientists was that the bidding system needed bidders to say what they were going to achieve. Frequently in science this is an unknown and so the only way of ‘knowing’ is to have done the work already!

Absenteeism, as another form of resistance by appropriation of time, was not apparent among AgResearch scientific workers. They were very committed to their work. However, it is interesting to take into account the comments of a business manager I interviewed, which suggest that the meaning of absenteeism should be questioned by consideration of the way scientists choose to use their time. He indicated how irritated he was by scientists choosing to go to a conference, for example, rather than complete work for a business client. Their priority was science, not business. He was frustrated also by the amount of time some scientists spent overseas, making it difficult for him to get hold of them (see Section 5.1). This could be considered a form of absenteeism. If the company now exists to ‘do business’ rather than science, then that is presumably what should take priority. For the business manager this was indeed the case, but not for the scientist. It is also another strong indication of the importance such scientists attach to their science identity.

These examples illustrate how the definition of ‘absenteeism’ can be challenged. What is done when workers are ‘at work’ and what is their attitude to that work? Dave and Ted (scientists), for example, stated quite clearly that their hearts will not be in it, because of the way they are being treated. Is this another form of absenteeism – not giving their ‘all’ to the job any longer, as they expect to do and as they did in the past? It indicates a move to instrumentalism, which can be seen as a form of resistance (Clegg, 1994).

Just as with technical workers, scientists can organise their work so that they do *more science* not *less*. Science managers (group leaders, SPLs) may manipulate their day in order to fit in some ‘science’ or they may come back in the evenings or the weekends in order to ‘do science’, which is not part of their managerial job

descriptions. In this way, they seek to protect their scientific identity. Some never go to tea breaks because they are too 'busy'.

That many scientists practise science when in fact they should be managing could be seen as straight 'traditional' appropriation because they are doing less of what they are paid to do. They may also be more likely to work longer hours in order to do the work of science practice that they want to do and this could be seen as an appropriation of materials/product. Further, among scientists there is a concern for excellence, which takes more time and resources (e.g., Fred, Gaye), and results in endorsing their scientific identity for good, published work. There is commitment to the work of science as they see it, but not as the employer sees it. As I have said, however, in the end the employer may also benefit from this (as I quoted earlier from Sturdy et al., 1992a: 2-3). 'Doing science' in the evenings and weekends may, for example, free up a science manager to attend to organisational administration during the 'working day' and management may tolerate it because of this.

In the past there was a concern that scientific programmes in AgResearch actually over-delivered on their contracts (Team Brief with Science GM, 11-4-00) with the unstated implication that this meant AgResearch was actually undercharging. This gives legitimacy to the classification of doing too much work as 'misbehaviour'. Such behaviour has also been called 'rate busting' (Foner, 1993). Corporate management want science groups to practise work limitation.

8.8.4.2 Appropriation of resources

There are obvious ways in which the introduction of new technology, processes and resources can be "sold" to the company, but such resources can be used to serve different purposes – the company seeing them in one way and scientists in another. There is competition for resources within the company. The MBU, for example, was competing with other groups for the micro-array technology, and the MCG had to

make a good case for not using the molecular biology facilities of other groups on other campuses but rather having their own facility.²⁵⁰

In the next section I will consider how the appropriation of resources and time protected scientific workers from having their scientific identities appropriated by corporate management for organisational purposes. So did other practices, which protected their autonomy, knowledge and personal networks.

8.8.5 Defending autonomy: resistance against appropriation of identity

And I still perceive AgResearch simply as a vehicle for me to do Government funded research. Umm, to think that I'm working for the good of the company AgResearch is just alien. I could never persuade myself of that. I know they pay my salary but as far as I'm concerned that's coming from the Government (Walter, scientist).

Walter is still carrying on his work for AgResearch but he is denying this by believing something else that for him, protects the reasons he has for doing science.

Ackroyd and Thompson (1999) argue that all organisational misbehaviour is about workers asserting their autonomy. Assertion of autonomy could also be described as a boundary struggle over who or what has the right and power to reduce the choices available to a worker. Many of the examples I have already used fit Hodson's third agenda of 'defending autonomy' (Hodson, 1995b: 94-97). In my paper 'Sheep as object' (Hunt, 2002b, Appendix C), I describe the way the four case study groups have used or not used the word 'sheep' to obtain funding for their research programmes in order to do what they regard as important research in science and agriculture, rather than follow company and Government policy. In this way each group defended its autonomy. At an individual level, autonomy was important to all the workers I interviewed.

If scientists are compliant or if they embrace the company direction, it is at the cost of having power within the organisation to interpret the work they do. Management

²⁵⁰ The argument put forward by the MCG was that the molecular biology techniques used in the study of bacteria are different from those required for animals (MBU) and plants (Grasslands), and that they needed the facilities on site. This encouraged more separation of the identity and work of the MCG, rather than collaboration. It also indicates that the efficient use of resources in the interests of the company as a whole was not a consideration of the group.

interprets it for them. This can be seen in the organisation's annual reports, for instance, which include the successes of scientists as corporate sees them, not as scientists. Corporate makes the selection, not scientific peers. At the same time scientists have other avenues (conferences and publications) in which to produce their own interpretation.

The category of 'craft control' within Hodson's 'defending autonomy' agenda, is particularly applicable to professional workers (Hodson, 1995b: 95) and is very much a concern in AgResearch. It is expressed in many ways at individual and group levels. Some scientists (e.g., Jim, Mark, Rae) voiced their concern to me about senior managers making scientific decisions they really had insufficient knowledge of, such as making promises about how long it would take to achieve something in the molecular biology area, and looking through research programmes for potential products. Earlier (Section 6.2.3) I wrote about patch protection. In AgResearch, some scientists will make sure the objectives in their publicly funded programmes are open-ended enough for them to "essentially do what they like", as I heard two different scientists in one group say on different occasions.

Len (scientist) was an interesting example of a scientist who managed not to be affected by corporate communications. He was well informed about what was happening at an organisational level but seemed to quietly go about his own work without any qualms. He told me he had never been happier. He had found a niche and just got on with doing what he saw as useful, productive work, choosing to pursue options arising in his work that were of scientific interest to him rather than ones which could lead to a profitable product for the company. He had discovered where he fits and he was extremely proud of belonging to AgResearch because he admired his colleagues so much. He was devoted to his science, but he also had leisure pursuits that were important to him. He told me of an occasion when one of these pursuits was important enough for him to choose it over attendance at a particular work-related meeting on another campus. The area of science practice, in which the expertise of the individual scientist is often superior to that of the science manager, means that scientists can exercise considerable discretion and autonomy over the leads they may follow in their work.

There is a ‘battle’ going on in AgResearch as scientific workers try to maintain control of their labour by using the power of their personal knowledge (Crozier, 1964) – something senior management cannot access without their cooperation. This may also explain why many scientists are reluctant to talk about their work in a wider arena than their own disciplinary one and particularly not in the public arena. Too many people would understand it and want a say in it and so challenge scientists’ area of expertise and control.

Scientists in AgResearch have demonstrated an awareness of using their own knowledge, skill and autonomy to outflank senior management, suggesting their feeling that such qualities are not valued by management. This is ironic when some academic writing suggests that autonomous workers should be encouraged for the good of a work organisation. One perspective in LPT has emphasised the link between craft labour and theories such as flexible specialisation (Piore and Sabel, 1984). Such theories argue that the new technological market conditions require intellectual participation from workers with upgraded skills and greater autonomy (Smith and Thompson, 1999: 206). May (1999: 5), however, describes this expectation of employers of innovation as the appropriation of “the ingenuity of the workforce”.

The next subsections discuss other ways in which scientists defend their autonomy. First, I consider how scientists’ motivations remain their own and are not based on organisational values. Then I describe the ways in which scientists maintain control of their own networks with business clients and other scientists. Finally, I provide an example which, I believe, beautifully illustrates in a symbolic manner many of the key aspects of the appropriation of resources in order to protect an identity based on science.

8.8.5.1 Appropriation of personal motivations

Is being motivated to do something for reasons other than for ‘the good of the company’ also misbehaviour? The adherence of some scientists to science (e.g., Wade and Bill) is like a religion.²⁵¹ Science is the main thing in some scientists’ lives

²⁵¹ There is a strong anti-religious feeling amongst some scientists and so they would dislike their adherence to science being seen as religious!

and if it disappeared there would be little left for them to live for. For Graham, work is what gets him out of bed in the mornings. If he did not have this work would he get out of bed? For Harry there was a time in his life when his work involved the whole family at weekends and in the evenings. For Bill, work is the main thing that he thinks about even while tramping the hills. For workers like these there are no boundaries between work and ‘not-work’. Knights and Willmott (1999: 83) feel that the search for “stable meaning” is more likely to occur by subordinating oneself to ‘higher’ forms of identity, such as religion, art, literature, and science. (It is interesting to note that Knights and Willmott include ‘science’ in this list.)

Henry did not look for the solution to ryegrass staggers so that he could produce a product which would make a lot of money for the company. He wanted to solve the problem and justify his theory as to the cause against those of others, and he was concerned for animal health. Todd did not want to find innovative ways of doing large numbers of pasture measurements in order to produce products, but in order to reduce the time he spent doing this mundane work, so that he could have more time doing what he was interested in. (It backfired because the faster he measured the greater the quantity of similar work he was given!) Miles wanted a solution to the problem of facial eczema to help farmers, not to help the company. Similarly, Craig was concerned about the survival of the sheep and wool industry, not about the survival of the company. Garth was fascinated by beetles. The Endophyte scientists were fascinated by endophyte, and so on.

The compliance actions of workers, which protect their self-interest, do not equate with selfishness or a lack of altruism. These workers are frequently interested in using science to contribute to national or global interests which, in their eyes, will make for a better world. Mark is a fine example. He is concerned about the priorities in the use of research funding being dominated by the wealthy elite:

We are not here to feed people ... and this is why it is very hard in agriculture to get funding because funding comes from rich people. Rich people will be the last on this earth to run out of food. So food has never been their greatest fear. And therefore these people are not going to put any money into agriculture because they never die from hunger. But these people will die from other things ... so that's where they put it – medicine (Mark, scientist).

8.8.5.2 Protection of formal and informal networks

Management attempted to control the number of conferences attended by workers by expressing a concern about whether it was necessary for several staff members to go to the same conference. Such attempts at control strike at the heart of scientists' loyalty to their discipline/profession. Matt, a scientist, always makes sure that if he and his technician are going to the same conference then they have different reasons for going, and on days either side of the conference they will visit different people. Thus Matt defends his perceived rights to membership of his scientific community.

Harry and others in the Endophyte Group have long-lasting relationships within the New Zealand seed industry. When it was announced that all company interactions with this industry would be managed by a 'client manager', Harry was delighted to hear the CEO of one of these companies say that he would still get in touch with Harry, as usual. This was Harry's intention also. So the companies collude with AgResearch scientists to maintain their relationships. This gives scientists further material to use as illustrative of the ignorance and ahistoricism of management, given its lack of understanding of how client relationships have been built up over many years.

Management discourages scientists from having individual contact with farmers. A user-pays system is supposed to operate. Ray now logs his phone calls to and from farmers, citing them as part of his work. In these examples, scientists are seen to resist by asserting their autonomy to stay with their definition of their work and the relationships it involves, not the company's.²⁵² As the responses of scientists to these incursions illustrate: "Management and employees ... are engaged in a continual struggle to appropriate and reappropriate relevant material and symbolic resources" (Ackroyd and Thompson, 1999: 26).

My study indicates that among AgResearch's scientific workers, the scientists in particular are resisting the development of instrumental attitudes, and the attitudes of a society that places most value on economic relationships. They want their work to

²⁵² Social capital is an interesting sideline here. It is a conceptual framework in which a person is valued not only for their capabilities but also for their networks and social skills. I feel unease with this attempt to 'measure' humans, but appreciate the concept.

be a place where they have autonomy to do what they feel work is about. Work is a place where they can realise their potential in an intellectual, not a social way. I use the word ‘intellectual’ quite deliberately, because these workers did not see work as a place where they felt it was important to realise their social skills. Work was about ‘doing work’, not about learning to relate better to others and forming the appropriate personal networks, *except* for the realisation of their intellectual and work goals. This was indicated by the cynical attitudes shown towards, and lack of attendance by most workers at, the I2I courses and other organisational training courses. There were some who saw the relationships with clients and influential others as important, but friendships that arose from these relationships and from work relationships were a bonus, not an expectation. Scientists had a calculative attitude to this aspect of their work. Social relations exist in order for science to continue, not for their own sake. This point was conveyed to me when I attended the Endophyte Conference (8 October, 1999). No-one talked to me, not even those I knew. Later one scientist told me that there were several people he had wanted to target in relation to his work. Much later in the history of this thesis, I realised that talking to me served no useful scientific purpose for him!

8.8.5.3 Protecting identity by symbolic action: appropriating champagne

When interviewing Walter (scientist) I was privy to a phone conversation he had with a colleague on another AgResearch campus about the launching of the Celentis brand that afternoon. This event was to be celebrated simultaneously on all campuses. In this conversation he referred to corporate management as the ‘police’. On other occasions I have heard the use of the words ‘thought police’ or ‘mind police’. These words can be taken as symbols of what scientists feel is happening to them. It is very strong language, but perhaps it is explained by the importance scientists place on the freedom to have their own thoughts and they see this as under challenge. It also demonstrates an awareness that normative control is at work. This type of control has been described as “engineering the soul” by “acting directly on employees’ subjectivity and emotions... in which alternative values and sources of resistance are marginalized or squeezed out” (Smith and Thompson, 1999: 214-5, making reference to Willmott, 1993).

What Walter said was: “You’ll have the police there. No police here. We’re going to use the free champagne to toast the future of science.” This comment wonderfully illustrates the symbolic appropriation of the champagne, especially labelled to celebrate an organisational achievement, for a radical purpose, to celebrate the future of science. The appropriation of a science identity by the organisational senior management is resisted! Many of the responses I have described have a symbolic value. This symbolism may be important just to the individual – an individual may be their own audience. Other acts may be directed towards the group as they remind members that the group culture is one of cynicism, for example. Myths and stories also keep a group together and maintain its spirits.

8.8.6 Resisting alienation: model summary

I drew together all these examples and reflections to produce the second model of the resistance process which describes the manner in which scientists resist alienation from the product of their work (Figure 8.3). Scientists in the groups studied practiced both direct resistance (e.g., through using various tactics to reduce the number of reports they had to write) and compliance. Appropriating work, resources and time in order to have autonomy over the work that has meaning for them would make them feel that their integrity was compromised, so they have to practise distancing techniques to protect themselves. They are able to assert this integrity by emphasising the values of the scientific community and by saying how the actions of corporate management look “silly” or “stupid” in their eyes. Scientists also play the funding game by emphasising it as a competitive ‘game’ in which they take on the identity of ‘player’, not their ‘real’ selves. They hope these techniques will leave them ‘free’ to get on with their science. This model follows a similar pattern to the estrangement model, but the substance of the distancing techniques is different.

I have argued that scientific workers resist and protect themselves from the experiences of estrangement and alienation, and I have described how the distancing tactics they use enable them to appropriate resources and time in order to practise science and reinforce and maintain their identities in the process. These processes have enabled them to be ‘compliant-at-a-distance’ workers. I need to make the point again, however, that though these systems of compliance are working in that the work of the organisation goes on, many workers are not happy in their work. They

would rather not be in a position of compliance. The distancing tactics do not work sufficiently well for them to feel good about their actions.

8.9 Conclusion

Managerial control aims to reduce the possibilities of unintended consequences (May, 1999). I think the failure by workers in AgResearch to embrace the company goals was an unanticipated outcome of senior managerial strategy. It was thought that buy-in would occur because it was so obvious – the organisation had to respond to the external environment in this way to survive (Strategic Planning Presentation, 21-8-00). All that was needed was for workers to be told. It did not require discussion. Senior management knew what was right - argument was not part of the senior management mindset though it was very much part of that of scientists! When there was resistance, workers showed no signs of realigning themselves and what they did to fit company strategy. Senior management then had to think of what action to take. The organisation was restructured to Platforms, and then a repositioning exercise was undertaken. HR incorporated ‘correct thinking’ into the performance appraisal process. These were structural adjustments to fit the strategy, but they have also come about because of workers’ responses to that initial strategy. Hence it is certainly not the case that “management acts and workers simply react” (Ackroyd and Thompson, 1999: 50, citing Edwards and Scullion, 1982: 273; see also Wicks, 1998).

Conclusion to Part C

In Part C I have linked the sociology of work literature with the emerging themes from Part B and developed an interpretation about what has been happening in AgResearch. The response of this CRI's senior management to its context has been to promote a system of corporate management to change workers so that they will identify with the organisational goals and culture, some things which senior management sees as necessary to survive. These goals and this culture have not matched with the goals and culture of the scientific workers and as a result these workers are experiencing estrangement and alienation. Most of these workers are resisting these experiences by complying in ways that give them alternative ways of making meaning: a sense of belonging, a sense of making a worthwhile contribution, and a way of reinforcing and maintaining their self-identity and autonomy. This compliance enables them to continue practising science, which to them is the most important way to make their lives meaningful. This resistance, I argue, was only partly successful because scientific workers continue to experience their work as very stressful and indicate that they are not happy. I considered why these workers do not participate in collective action and discussed some of the consequences of compliance.

PART D: CONCLUSION AND IMPLICATIONS

I close this thesis by summarising what I did in this research and why, what I found, and what I think may be its theoretical contribution. Then I will consider some recent reports on the New Zealand science scene, and draw together my findings and the recommendations from these reports to make some recommendations of my own for future science policy and organisational practice. I conclude by suggesting further research arising from the issues raised by this thesis.

D.1 Summary of research

At the beginning of this thesis I stated that I aimed to determine the impact of the Government's restructuring of the public funding of science research on the everyday lives of scientific workers. Then I wanted to discover how scientific workers made their work meaningful through this period of change in order for them to survive in work and continue to practice science. From this I hoped to deduce ways in which a research organisation could assist scientists and related workers to practise science. A final aim was to further the theoretical understanding of 'resistance' and 'compliance' in the workplace.

These aims were achieved by conducting an organisational ethnography of AgResearch, an agricultural science research organisation, placing particular emphasis on case studies of four science groups in that organisation.

At the beginning of this research I was aware that scientific workers spent a lot of time complaining about their work and at the same time it was obvious to me that they loved it. On a recent visit to one AgResearch campus (February, 2003), I was told how workers there spent half an hour at morning and afternoon tea time, and at lunch time grizzling about AgResearch. The scientist who told me this commented that it was a great waste of time and energy and managers, whether concerned about workers' welfare or not, should surely be concerned about the loss of productivity from such behaviour. How has this come about?

The Government created Crown Research Institutes as Government owned companies in a competitive system in the belief that this was the way to achieve

accountability to Government policy and efficiency in the use of public money. This in turn impacted on the way these organisations have structured themselves through corporatisation, and the management methods they have used to achieve their organisational goals. Hence, Government policy and its implementation through MoRST, FRST and the CRIs set up boundary struggles between these organisations. These boundary struggles were then carried into the organisations and challenged the very notions of who and what has the right to make meaning in workers' everyday lives. Who should decide why people do the work they do? When the meaning of workers' everyday lives is closely associated with the work itself, then the very self-identity of a worker comes into question. The global environment in which values are dominated by measurements simplistically based on 'money' (market value) and administrative power, creates difficulty for those who make meaning of their everyday lives in more varied and complex ways.

In the particular context I studied, scientific workers in AgResearch expressed a dominant concern to 'do science' and by so doing they wished to protect and reinforce their self-identities and the relationship these identities had with their work. Through such science practice, scientific workers are able to achieve some of their reasons for doing science: adding to scientific knowledge, helping the agricultural sector and protecting the sustainability of the environment. The organisation, through its use of a system of normative control, promoted the concept of a single organisational culture based on a life sciences company which was to make a profit through the production of global, knowledge-based, biotechnology products including intellectual property and processes. Scientists within this organisation have to obtain funding for their science through meeting the objectives of Government policy as formulated and implemented by FRST. These objectives aim for New Zealand to become a 'knowledge economy' operating in a global environment. Both the espoused organisational culture and Government policy clash with the way in which scientific workers see themselves. They have become very unhappy and find it very stressful working in such an environment.

That AgResearch continues to exist and scientific workers continue to work there, in spite of their unhappiness, demonstrates that scientific workers have found ways of

complying such that they are able to do their work, to practice science without putting the organisation at risk. How have they managed to do this?

I postulated that scientific workers are experiencing estrangement and in addition, that scientists are also experiencing alienation. I set up two models to demonstrate the ways in which these workers can resist these experiences (Figures 8.2 and 8.3) in order to survive in their work (see Section D.2 for a fuller description). These models combine the ideas of other writers into an integrated whole, in which it can be seen that in order to comply, workers have to protect themselves from being taken over by their work organisation. They do this by making their everyday working lives meaningful. They seek to belong to groups and work practices concordant with this meaning while simultaneously acting to take control of this 'making meaning' as autonomous individuals, not under the control of those who wish to do it on their behalf. Above all, I have demonstrated that scientific workers will use all the methods available to them, creative and ingenious, in order to do more science, i.e., to further their science practice.

However, in seeking to ameliorate the symptoms - estrangement and alienation - of the impact of restructuring, scientific workers are not dealing with the cause.²⁵³ The structures set up by the organisation and the Government, which I have named the 'accountability culture', have outflanked them by not allowing their participation in a full and power-sharing way. The 'listening up' culture reigns! It is not a culture in which scientific workers feel valued. It is not satisfying for scientists in particular, just to know that they have ticked all the boxes and completed their reports. This feedback does not provide any stimulation or challenge to further their work, in the way that their interaction with the scientific community or a contracted business partner does. An accountability culture has at its heart the assumption that people cannot be trusted, that people are only interested in personal financial gain and act calculatively to maximise this gain. Normative control implies that workers can be trusted if they believe in and are committed to the organisation, and that they will work harder. When workers cannot be trusted, then normative control requires the

²⁵³ This study is full of ironies, however. In this instance, many of the scientists I spoke to emphasised in their science practice the importance of finding the cause of an agricultural problem and solving it, not just dealing with the effects of that problem.

imposition of these values. When workers resist these values in order to protect their own, they may evolve into those very instrumentalists the accountability culture was set up to control. Scientific workers' disengagement from a commitment to science, of course, has implications for the future of science in New Zealand.²⁵⁴

Through the affirmation and general agreement this research has received from the three AgResearch campuses to which I have made presentations (February, 2003), which I take to be a loose 'triangulation' of the research endeavour, I am convinced that if I chose another four science groups to research in another four Science Platforms they might have some distinctive characteristics, yet have exactly the same concerns and responses as those I have studied here.²⁵⁵

D.2 Theoretical contributions

As my contribution to the theory on resistance and compliance in the workplace, I have developed the concept of 'estrangement' to describe workers sense of not belonging, of feeling that their contribution is no longer valued and the sense of insecurity inherent in such feelings. I have used the concept of 'alienation' to describe the loss of autonomous control over their work and the product of that work that scientists are experiencing. I have argued that both estrangement and alienation are resisted in everyday working lives. This may be implicit in the work of writers like Ackroyd and Thompsons who claim that all misbehaviour at work is related to workers' claims for autonomy or control over who they are, and hence is related to alienation.

I have demonstrated that the power of normative control is not absolute. Workers do resist it in various ways, some of which have been described by others and some which I describe in this thesis. I use Clegg's notion of 'outflanking' to demonstrate that it is not only organisations that outflank workers (Clegg, 1994), but that workers

²⁵⁴ Thanks to Jeff Morton for the word 'disengagement'. At my seminar at Otago University on 19-2-03, he said that he had noticed an increasing 'disengagement' of scientists from their work.

²⁵⁵ I have also received support for the findings of this research from a former scientist in another CRI (Institute of Geological and Nuclear Science, IGNS) who said he was going to send my paper (Hunt, 2002a) to his former colleagues, a scientist in HortResearch, and a social scientist in Landcare. It has also received support from a former divisional manager in AgResearch. People working in the educational sector – secondary schools, universities and a polytechnic - have also strongly identified with this research.

can outflank organisations. Ackroyd and Thompsons' appropriation concept is employed to show that workers can appropriate work time and work resources to do *more* work rather than find ways of doing *less*. I have also illustrated that workers can be committed to work while *not* being committed to their employer,²⁵⁶ in contrast to Ackroyd and Thompsons' linking of the two.

By producing a model of the resistance process I have explained how scientific workers are resisting the feelings of estrangement which this imposed organisational culture has engendered. Workers counter this estrangement by asserting their membership of groups with alternative value systems in which they are accepted, experience a sense of belonging, and/or are able to contribute, and by making corporatisation invisible. These techniques enable them to distance themselves from organisational influences sufficiently to be able to accept the rewards and satisfactions from their science practice that reinforce their identities as worthwhile and valuable members of society. It also means, of course, that they continue to have paid employment.

I also explain with a second model of resistance, how scientists (as distinct from technical workers) are resisting the experience of alienation that has come about as the organisational corporate management and FRST systems in which they work have tried to control what they produce and how it is to be used. They resist this alienation by trying to take control of their work in various ways, either directly or through methods of compliance. By directly challenging corporate management who request much report writing, some scientist-managers are able to make more time for science. Most scientists go about resisting more indirectly, by appropriating the work time and work resources paid for by their employer (and funding) in order to do the work of science that serves their purposes rather than those of the organisation and Government policy. They do this by valuing their membership of the science community and its alternative value system, and seeing themselves as 'playing the game' necessary to win funding for their work and to give them some security. This protects their autonomy, integrity (an essential quality for those who practise

²⁵⁶ This is the reverse of the instrumentalism of Goldthorpe et al. (1970), in which workers were committed to the employer (because of the high pay) but not to the work (assembly-line production).

science), and that part of their identity based on the practice of science. It keeps the 'playing the funding game' separate from the 'doing the science game'.

This thesis demonstrates the usefulness of an ethnographical approach to the study of work. Through both observation and talking with those observed I have been able to include the meanings workers give to their work in order to understand better their responses to change. This was particularly important when I considered the purpose of workers' resistance because it emphasised workers' need to protect the things important to them and helped them survive in work they loved rather than attempting to change the system in a revolutionary and collective way. They perceived this as putting at risk their survival in work, given the limited options for employment as scientists in the New Zealand context.

Workers' voices have dominated the development of this theory rather than those of theoreticians or the researcher, emphasising the need for future research to also contain this dimension in order to be true to those researched.

D.3 Implications for science policy and organisational practice

Two main issues emerge from this thesis. The first is to do with science policy and the second is to do with the management of science organisations. In Section 4.2 I stated: "No assumption is made here that the outcome of the negotiated meanings of work is one that will succeed in the way intended by the actors or by Government". From this thesis it is apparent that the response of scientific workers to Government policy and their working environment may allow them to survive in work but it has not maintained or improved their level of satisfaction, and indeed is making some less committed to their work. The scientific workers' response has not made the work of science any more likely to continue into the future in a form that retains and transmits the present generation's values and reasons for doing science to the next generation. The systems which FRST has introduced as a result of Government policy have not produced a more committed, happy, workforce of scientific workers. Surely Government did not intend these responses from its policy? Concern about some of these issues appears to have 'trickled up' to Government. The Minister of Research Science and Technology called on MoRST to produce a new strategy statement for RS&T by November 22, 2002. As a result, many interested parties

published their perspectives on this issue. In this section I will summarise three of the most recent reports in the areas pertaining to this thesis: the report, *Transforming New Zealand through science: Concepts for a performance based science system*, from the New Zealand Association of Crown Research Institutes (ACRI, 2002); the Council of the Royal Society of New Zealand's open letter to the Minister of Research, Science and Technology (Council of RSNZ, 2002); and the McKinsey and Company report, (McKinsey, 2002), *Making R&D a national priority* prepared for the Knowledge Wave Trust. I then incorporate these points with those of my thesis to produce some recommendations for science policy. I suggest some recommendations for organisational practice because this in fact may be where change needs to start. Finally, in this section, I make some recommendations to science practitioners.

D.3.1 Recent reports on science policy

According to the Association of Crown Research Institutes (ACRI, 2002: 2), the science system should be developed by a “wide range of stakeholders” and “it should reflect the insight, experience and learning of those most closely connected to industry, science and global knowledge ...” (ibid.: 5). All these stakeholders should be regarded as having equal value.

Good science policy should value science and scientific workers (Council of RSNZ: 2002: 3-4) by providing them with job stability and better financial rewards. This can be achieved by supporting more long-term research and recognition that research is dependent on the continual maintenance and building up of the capabilities of scientists (ACRI, 2002; McKinsey, 2002; Council of RSNZ, 2002). All reports place a high value on basic research and two, on the development of critical mass (McKinsey, 2002: 6; Council of RSNZ, 2002). Accountability should be judged by wider measures such as social and/or environmental return (ACRI, 2002: 2) and not judged just for economic return. Research should be considered as either producing a commercial return, or national benefit/public good from which no economic return is expected (ibid: 10). New Zealand is regarded as being too small a country for a competitive system (ACRI, 2002: 14; McKinsey, 2002: 6).

Governments and these entities (ACRI, RSNZ, Knowledge Wave Trust) talk about changing the RS&T system as if this system will “produce” the required environment

in which certain goals will be achieved - 'if the structure is right then the rest will follow'. There is a fallacy here. What my research is saying is that scientific workers will work around the structures when they do not suit them and that this may now be a habit. New structures will have to restore their trust to achieve buy-in by scientific workers. At the moment I cannot see the average scientific worker even being bothered to engage in the debate. They have no evidence from the past to suggest that they will have any influence.

D.3.2 Recommendations for science policy and science funders

1) Value science and science practitioners by:

- Increasing job security.
Implication: Funders need to consider the impact of their decisions on the practitioners/providers of scientific research.
- Accountability acting up *and* down the system. (Policy makers, funders and providers having a responsibility to demonstrate evidence of 'listening up' *and* 'listening down'.)
- Placing a greater emphasis on longer-term research.
- Placing a greater emphasis on basic research compared with technology producing, commercially oriented, research.
- Having a better match between policy goals and the goals of science practitioners.
- Increasing remuneration of science practitioners.
- Raising the profile of science and science careers.

2) Provide clarity about whether research is to meet national or international goals.

3) Value the contribution of science as well as business.

Implication: Businesses are encouraged to participate in R&D rather than science practitioners penalised when businesses practitioners will not participate.

4) Include *all* stakeholders on an equal basis in policy making. (Scientists can tell policy makers how the system is working for them.)

5) Develop an awareness that scientific research is a social enterprise. It needs to have all sections of the community 'on board'. Providers should be part of this dialogue – not just MoRST and FRST, i.e., scientific practitioners are encouraged to become more socially and politically active.

- 6) Provide meaningful feedback to science providers and engage in their work with interest.

D.3.3 Recommendations for organisational practice

- 1) Value, encourage and celebrate science and scientific practitioners by:
- Managers acting as advocates for science and scientific practitioners in Government policy, business and community arenas.
 - Managers working in partnership with Public Service Association (union to which majority of scientific practitioners belong) to improve the remuneration of scientific practitioners.
 - Employing managers (including CEO) who live these values.
 - Encouraging a partnership relationship between managers and scientific practitioners.
 - Practicing listening down *and* listening up *and* listening sideways.
 - Practicing accountability in all directions (as for listening).
 - Evaluating scientific practitioners within the organisation according to the work of science, not according to managerial criteria, i.e., are they good at their work – not, do they meet organisational values?
- 2) Encourage feedback through all levels of the organisation.

D.3.4 Recommendations for science practitioners

- 1) Be interested in the work of those you work with both in and outside your group.
- 2) Give and seek feedback.
- 3) Manage and/or demand work in a 'project' form so you have responsibility for a whole piece of work.
- 4) Act as advocates of science in your communities.
- 5) Seek greater advocacy from the Public Service Association.
- 6) Act collectively.

The first two sets of recommendations have been developed through the interaction I have had with those attending seminars I gave on the Grasslands and Lincoln campuses, and at the MBU in February 2003. I also had discussions with John Lancashire (science consultant) and John Hay (CEO of the CRI, Environmental Science Research) at this time. John Hay, in particular, felt that though CRIs do have to work within a tight framework imposed by Government, there are still ways in

which organisational management can improve the environment for science practitioners. However, naturally I take responsibility for the final form of these recommendations.

D.4 Future research

Because of the open-ended nature of this research, it raised questions which would be worth exploring further in a more focused fashion.

- 1) The purpose of a research organisation and the impact of that on the motives of the people who work there, and consequently on the type of people who would choose to work there? For example, if profit is a motive for organisational management, who will benefit from research done in this organisation and what sort of people will wish to find jobs there? If management rather than FRST or scientists decide on what research is done, who benefits? What sort of research will be done? How will the culture and ethics change?
- 2) What is the long-term impact of organisational communication on an environment in which science is practiced? If communication within a research organisation is mainly 'downwards' then what does that say about the research environment that is being fostered? If the CEO is only interested in strategy, then what implications does that have for the people who work there?
- 3) What is the personal impact on scientific workers of working in an environment which encourages 'game playing'? What are the risks to the knowledge generation and innovativeness of scientists who are no longer able to keep the 'funding game' and the 'doing science game' separate?
- 4) Are the findings of this research just applicable to AgResearch? If New Zealand is to become a society based more on 'knowledge work' then it is important to find out what is going on in other research organisations both public (CRIs and universities) and private, and see if there are any differences. Are there places where scientific workers are happy, and if so, why? This research has studied the impact of restructuring. Are these results applicable to other public sector organisations such as those in the health, welfare or education sectors? Is the

common factor restructuring or is it something else that is making workers dissatisfied? How much does 'science' have to do with the results of my study and how applicable are its results to non-science organisations?

Future research in these areas should be necessary for Government to understand the impact of their policies, and to improve future policy-making.

Coda

The four year journey of this thesis has flown by. It has challenged me in ways I did not dream of. The emerging process of qualitative research in which this thesis has taken on a life of its own has been a challenge to my patience and ego as I set deadlines which I was not able to meet for the first time in my life. This process has meant also that I seemed often to be in a state of confusion; again, not a condition I was used to! At the same time it has been totally engaging and stimulating. The questions arising from this thesis are ones I will ponder for the rest of my life. It was only over the past few months as my lack of academic writing experience was tested to the utmost that I wondered if I had the persistence to continue to the end.

This work adds to the tale of human beings' search for liberation from the iron cage of irreversible rationality, not only endorsing Weber's fear of this possibility but also providing evidence for resistance against it. I hope that it is a testament to the resilience of the human spirit as it catalogues the impact of the management of New Zealand's restructuring of the public sector on a particular group of workers.

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Appendix A: Questionnaire

Questions and points that need to be noted or paid attention to

Identity

- What do you call yourself?
How has this changed over your time of employment in science/ag. science?
- How do you describe your work/job to people outside AgR?
How has this changed over your time of employment in science/ag. science?
- How do you describe the organisation you work for?
How has this changed over your time of employment in science/ag. science?

Personal story/Work

Tell me about how you came to work in science - from the beginning.

- Who/what were the major influences (positive and negative) on you? How? Why?
- Expectations on entering this work/dreams/hopes
- Expectations and hopes now
- What would you like to be remembered for when you are retired? Why?
- What do you stand for?
How do you think this has changed over your time in employment? Why?

Work

Tell me about your work.

Describe a typical day.

- Highlights/good times – describe a good day
- Frustrations/bad times – describe a bad day
- What makes you feel good about your work? What gives you satisfaction?
- What do you value most about your work? What's most important to you about your work?
- How do you know that you've done a good job?
How do you think this has changed over your time in employment? Why?
- Who makes sure you do your job? *Control – 1st, 2nd and 3rd level.*
How do you think this has changed over your time in employment? Why?

Change

Tell me a about a time of change in your work.

- How has your work changed? – actual work (type of, topics/areas), organisational environment, technology, networks with people, publishing opportunities, career opportunities, way managed, time spent on work (allocation of time to paperwork, funding applications etc.)
- How has this affected you?

Value

- How do you know when you are valued?
- What makes you feel important?
- How would you like to be noticed in the organisation? Who by? What for?
- What do you value? What's important to you?
- What do you want from the people that you work with?
- Who do you value? What qualities do they have that you value?

- How do you value others? How do you show them?
- Who is important around here (locally and nationally)? Why? How do you know?
- Tell me about belonging to AgR. What makes you feel as if you belong?
- What's important to you in your working environment?
- How do you go about getting some of these things that you want?

Meanings of science, ag. science, technology, agriculture

- What is science?
How has your understanding of this changed over the period of your career?
- What is agriculture?
How has your understanding of this changed over the period of your career?
- What is agricultural science?
How has your understanding of this changed over the period of your career?
- Where is the boundary between science and technology/biotechnology?
How has your understanding of this changed over the period of your career?

Science practice

- To you, what does it mean to be a scientist/scientific officer/research associate/technician as compared with a scientist/scientific officer/research associate/technician?
- How do you distinguish between being an agricultural scientist or a scientist?
- What are the results of your work? For what can you be held accountable?
- Who do you serve? Why do you do this work?
- How do you think a product is produced? What is the process?
- Tell me about an example of innovation that you know of.
- Tell me about an example of creativity that you know of.
- What/who stimulates your work/ideas?
- What stimulates your curiosity?
- What sort of 'problems' do you come across in your work?
- What encourages you to persist with something? What helps you when you come up against a 'problem' in your work?
- How do you work your way through a 'problem'?

The research organisation

Organisational culture

Tell me about AgR.

- How does it function?
- How do you feel working for AgR?
- Who/what does the organisation most value?
- What do you want from this organisation?
- What's most important to you in an organisation you work for?
- What's going on around here?
- Who do you think influences the direction AgResearch is going in?
- Tell me about the winners and losers in AgR?
- What do you have to do to get by (to belong) in this organisation?
- What do you have to do to get on (be promoted) in this organisation?
- AgR is a male organisation. Any comments?

Purpose

- What is an agricultural research organisation for?
- What is an biological life sciences company for?

Organisational change

- What changes have you seen in the way an agricultural research organisation is run?
Why do you think these changes have occurred?
- How have you coped with these changes?
- What have you done?
- How have these changes affected your practice of science?
- How have they affected you personally?

Organisational Communication

How do you learn about what's going on around here?

- Could you describe a typical organisational meeting to me? (*May need to have both a group meeting and a Team Brief.*)

Then for each:

- Have they changed over time?
- Who is influential at them?
- What do you feel about them?
- What do you need to do to be heard?
- What makes you go to them? What makes you stay away? *Explore whole idea of the rewards they get for staying away, or going.*

AgResearch values

- What do you think AgResearch wants of you?
- What's important to AgResearch?
- What does AgResearch stand for?
- What do you feel about these things? How does this contrast with former times in the DSIR/MAF Tech?
- Who serves who in this organisation?

The future

- What do you see as the future for AgResearch?
- How do you feel about that?
- What do you see as the future for agricultural science?

For line managers

- How are you expected to manage your group? How do you know this is expected of you?
- How do you like manage your group/s? Explain.
- What role do accountants play in this organisation? What is their policy? E.g. accruals, correction of mistakes, accountability. Who decides their policy?

For others

- How are you managed?

Version: 28 August 2000

Appendix B: Demographic breakdown of those interviewed

Science Group		W&S	E-Group	MCG	MBU	Others	Overall totals
Gender	Male	6 (86%)	12 (86%)	9 (60%)	5 (38%)	6 (86%)	38 (68%)
	Female	1 (14%)	2 (14%)	6 (40%)	8 (62%)	1 (14%)	18 (32%)
	Totals	7 (100%)	14 (100%)	15 (100%)	13 (100%)	7 (100%)	56 (100%)
Age Group	20-	0 (0%)	0 (0%)	1 (7%)	5 (38%)	0 (0%)	6 (11%)
	30-	2 (29%)	1 (7%)	8 (53%)	4 (31%)	4 (57%)	19 (34%)
	40-	2 (29%)	5 (36%)	2 (13%)	1 (8%)	0 (0%)	10 (18%)
	50-	3 (43%)	7 (50%)	4 (27%)	3 (23%)	2 (29%)	19 (34%)
	60+	0 (0%)	1 (7%)	0 (0%)	0 (0%)	1 (14%)	2 (4%)
	Totals	7 (100%)	14 (100%)	15 (100%)	13 (100%)	7 (100%)	56 (100%)
Background	MAF	4 (57%)	0 (0%)	7 (47%)	3 (23%)	0 (0%)	14 (25%)
	DSIR	0 (0%)	11 (79%)	0 (0%)	0 (0%)	3 (43%)	14 (25%)
	Other	3 (43%)	3 (21%)	8 (53%)	10 (77%)	4 (57%)	28 (20%)
	Totals	7 (100%)	14 (100%)	15 (100%)	13 (100%)	7 (100%)	56 (100%)
Status	Technician	0 (0%)	3 (21%)	1 (7%)	3 (23%)	0 (0%)	7 (13%)
	Research Associate	4 (57%)	1 (7%)	5 (33%)	5 (38%)	0 (0%)	15 (27%)
	Scientist	1 (14%)	3 (21%)	1 (7%)	1 (8%)	2 (29%)	8 (14%)
	Group Leader	2 (29%)	5 (36%)	5 (33%)	2 (15%)	2 (29%)	16 (29%)
	SPL	0 (0%)	1 (7%)	1 (7%)	1 (8%)	0 (0%)	3 (5%)
	PhD Student	0 (0%)	0 (0%)	1 (7%)	1 (8%)	0 (0%)	2 (4%)
	Other	0 (0%)	1 (7%)	1 (7%)	0 (0%)	3 (43%)	5 (9%)
	Totals	7 (100%)	14 (100%)	15 (100%)	13 (100%)	7 (100%)	56 (100%)

Appendix C: Sheep as Object

Sheep as Object: The Meaning of “Sheep” to Different Science Groups

Abstract

The meanings of sheep are used as a tool to examine how scientific researchers in a changing policy environment negotiate their work to maximise their chances of survival in employment, and their chances of continuing to do work they regard as important.

Introduction

This paper is about the ways in which four different science groups in a Crown Research Institute (CRI) negotiate the representations they make of their work in order to achieve funding for their research. The research work of all groups is directly or indirectly related to sheep. I wish to examine the socially constructed meanings sheep have for each group (the ethical sheep, the invisible sheep, the sheep as gene map, and the sheep as laboratory), the groups’ successes at gaining public funding, and the links to Government and organisational policy.

My interest in ‘sheep’ arose as a sideline to an ethnographic study of these science groups conducted from 1999 to 2001 in which I examined the groups’ experiences of work in a changing environment, using extensive interviews of group members dispersed over five sites, and observations on four of those sites. In this larger study I interpret the ways individual science workers make their work meaningful using an understanding drawn from symbolic interactionism. Here I apply the same perspective²⁵⁷ to the meanings of sheep and the instrumental value of these meanings for each of the four science groups.

The tool of symbolic interactionism

Symbolic interactionist methodology examines the meanings bestowed by social actors on everyday objects. Blumer (1969) was the principal architect of this interpretive approach to understanding social action and interaction. The theoretical foundations of Blumer’s method rested on the work of Mead (Blumer, 1986, pp.61-77). In essence, symbolic interactionism considers actions and objects to have no intrinsic meaning. Instead meanings are constructed and bestowed through social

²⁵⁷ Of course, there are many other perspectives that could be drawn upon in such an analysis. For example, a science studies framework (Latour, 1999) using the ideas of Actor Network Theory (ANT) (Latour, 1987), might emphasise how the word sheep is “translated” (Latour, 1999, p.311; Akrich and Latour, 1992, p.264; Callon, 1991, pp143-146) in order to fit, be understood, and serve the needs of the actors in the different arenas in which it is used, e.g., agriculture, science, Government policy, FRST. An example of such a work is Callon’s (1986) study of scallops and fishermen. Adopting a slightly different slant to ANT one might investigate how innovators construct different representations of the end user associated with their innovations, and work to meet those representations (Akrich, 1992, 1995). Social constructivism (following Scarce’s (2000) work on salmon, nature and science) would emphasise how society shapes science and constructs sheep as “natural actors”.

interactions and are negotiated by actors according to the specific social context. The constructs (notably language) come to “stand for” or “symbolise” the objects and activities, often in a “short hand” form (Blumer, 1967, 1986). The same word can often have different meanings, and therefore significance, to different communities. For example, “cool” means one thing to a weather forecaster, another to a teenage peer group. Meanings are neither fixed nor exclusive. Although, by common agreement, the word “sheep” symbolises the woolly, four-legged, grass-eating animal, the negotiable character of this meaning allows for both the possibility of other meanings (e.g., meat for some, clothing for others), and its tactical use in constructing action pathways perceived to facilitate desired ends.

In keeping with symbolic interactionist principles, I will show that science actors construct different meanings of sheep in order to safeguard their livelihood. In effect, the relationship between Government policy, implemented through the funding structures of the Foundation for Science, Research and Technology (FRST or “the Foundation”), and the science groups as they manoeuvre to obtain the funding necessary for their survival, turns in large measure on the meanings science workers negotiate for sheep. In keeping with the sociology of human action and social structure (Giddens, 1984, p.12), no assumption is made here that the outcome of the negotiated meanings of sheep is one that will succeed in the way intended by the actors or by Government.

Setting the scene

Since the early 1980s there has been a strong message to the research community that agriculture is no longer central to Government thinking in the way it had been. At present the future of New Zealand’s economic well-being is seen to lie with the ‘knowledge society’²⁵⁸ (Maharey, 2000). Except as a spin-off for biotechnology, agriculture is not regarded as an important contributor to this “society” (Hodgson, 2000a, b, c, d). This is illustrated by an excerpt from a speech by the Minister of Research, Science and Technology:

Transformation means moving New Zealand beyond its traditional dependence on the primary industries for the generation of wealth. We are extremely good at primary production and processing. It is a vital part of our future and we continue to post remarkable productivity increases. But it’s not enough ... wealth is increasingly taking the form of knowledge rather than stuff. (Hodgson, 2000a, pp.1-2)

Trends in the allocation of public research funding through the Foundation have followed this declining emphasis on traditionally defined agricultural products. The recent *Investment Change Process November 2000* document (FRST, 2000) states:

... the Foundation will progressively shift its research portfolios from mature areas of commodity cost-reduction activities towards RS&T that underpins high value-added export industries (Section 1, p.2).

Where research primarily underpins the achievement of efficiency gains in undifferentiated commodities ... [it] will be targeted for disinvestment (Section 2, p.3).

With the complete ‘disinvestment’ process expected to be completed over the next five years, the sheep industry, and the wool industry in particular, are conspicuously

²⁵⁸ The Labour Government uses these words interchangeably with those used by the previous National Government which focused on a knowledge ‘economy’.

threatened. Wool research is seen to be a very mature science in which knowledge about wool production is so advanced that any additional research is presumed to be incremental and unlikely to have a large impact on production processes, efficiency and intellectual property (IP), or obtain benefits that justify R&D costs, in an industry already producing a low value product.

There is an obvious desire by Government to change the image of New Zealand as a country full of sheep and therefore associated with low value commodity production, to one focused on knowledge and innovation. Researchers have responded to this threat in a range of ways. Words like “commodity” and “production” have disappeared from research proposals as researchers attempt to distance their work from the discredited efficiency and primary production aims. To align itself with this trend, AgResearch, one of the CRIs formed in 1992 to service the primary sector during the restructuring of the public research funding system, no longer refers to itself as an agricultural research institute but as a “life sciences company” (AgResearch Strategic Plan 2000-2003). Ironically, these adjustments are considered necessary even though record overseas exchange earnings have just demonstrated the importance of the agricultural sector to New Zealand’s economic well-being for the year of 2000-2001 (INFOS Database, Statistics NZ).

The issues and responses of the different science groups

In 1999 the CRI under study was restructured into eleven Science Platforms replacing the former four Divisions. Each Science Platform consists of about fifty to seventy scientific workers organised into four or five different science groups, managed by a Science Platform Leader. The Platforms are organised under common research themes and it was hoped that with this restructuring the boundaries between the groups within each Platform would be broken down in sympathy with the Foundation’s explicit move to fund larger programmes and to encourage collaborative research. This diverse organisation has been held together by its interest in the particular area of the primary sector it was designated to serve on the formation of the CRIs. Also there is little else on offer in the way of employment for those scientific workers employed in this CRI who wish to remain in New Zealand and perform full-time research, but not work in a university.

Forty-five percent of the revenue of the CRI in the year ended 30 June 2001 came from FRST funded programmes. The rest came from commercial contracts, contracts with other CRIs and from the CRI’s subsidiary companies. This was the first year so-called “commercial” revenue has outstripped that from FRST in the history of this CRI (2001 Annual Report).

Wool and Skin Biology Group (W&S Group)

After the internal restructuring in 1999, the W&S Group’s was placed in the AgSystems Platform despite its seven members preferring to be in the Animal Genomics Platform. Its leader made many submissions to this effect but did not feel he was listened too. Officially the move was to avoid further dilution of the molecular genetics capability of the Animal Genomics Platform but it may well have been that they were placed in this Platform to even up the numbers. The AgSystems Platform consists of very diverse groups ranging across farm systems, to modelling, to social science, and its focus is work in the food product supply chain. This work requires searches for funding from industry sources. The W&S Group with its focus

on non-food by-products, was adversely affected by reductions in Government funding and found little R&D investment in a “sunset industry”.

The W&S Group’s members see it as ironic now that their research proposals in 1999 were used internally as exemplars to other groups of the shift the organisation wished to make in order to demonstrate to FRST how it had aligned itself to Government policy. This was to be done by focusing on quality and adding value, rather than commodity production. Now the requirement is for “new and novel products that will add wealth to the primary sector” (from the abstract for the ‘Low Chemical Systems and Associated Branded Products’ FRST programme 2001).

The Group has an applied science orientation as members want their work to be useful to the farming industry. They are not in science just for the sake of adding to scientific knowledge. In the course of an interview, Grant²⁵⁹, a scientist in the Group, epitomised these attitudes when he said, “I love sheep”.²⁶⁰ Others in the Group also chose their work because of their agricultural interests, as indicated by Bert and Colin’s comments:

I always had a fascination with agriculture and particularly when I got on to my teen years. I enjoyed yeah, going on holidays to relation-type farms. And I got a lot of personal satisfaction out of being outside working with animals - stuff like that. (Bert)

... everything we did was for the good of the New Zealand farmer. (Colin)

The members of this group actually like, if not necessarily love, sheep. They like working with them and they are concerned for their welfare and for the welfare of sheep farmers. This has strong implications for the orientations of the group. It wants to save the sheep industry or, to put it more moderately, to help the sheep industry, and (particularly for Grant) the wool industry, survive. This has led the group to consider animal welfare issues because it believes such issues could be a major factor in future marketing of NZ sheep products overseas. For example, some practices to reduce the impact of flystrike in the sheep industry add to the costs and work of farmers, involve the use of chemicals, or may involve short but painful procedures to sheep, in order to prevent the slow death that flystrike can cause. In this context, Grant came up with the concept of “the ethical sheep”, a wool-producing sheep with a bare bottom and head, and bare legs. This is in the process of development through traditional breeding methods. Initially money for this research came out of other budgets and, as Grant popularised the idea, it was first funded through a wool programme and now is funded within a programme on low chemical use. Three years down the track the whole research policy focus of the Foundation has changed and this Foundation funding is unlikely to be continued²⁶¹ (Scobie, 2001). The Group’s present focus is to apply for Meat and Wool Board funding but these entities are in disarray and the Group’s future is uncertain.

In its attempts to survive, the Group has also encountered difficulties within the CRI. After trialling titles for the ethical sheep programme proposal incorporating sheep welfare, flystrike and sheep breeding, a suitably unrelated title was accepted at the third attempt and it was fitted into the Low Chemical Systems Programme. This

²⁵⁹ Pseudonyms are used throughout.

²⁶⁰ All members of the group were interested in sheep but three in particular could be said to be particularly fond of them.

²⁶¹ Some of the hard won funding of this research group has also been redirected internally, by the Science Strategic Manager, to the FRST programme “Control of Human and Animal Hair Growth and Characteristics” i.e. it has been redirected to study baldness!

is a deft reference to organics without using the word and all its complicated referents. The content of the proposal had not changed. It was surmised that the AgSystems Platform does not research any issues to do with animal welfare, or animal breeding. To do so would be seen to step on someone else's "patch". Another survival tactic has been to diversify into research on leather and particularly deer leather. The Group has also looked for work with other fibre and meat related industries but as these are very small there is little money available for research. One member brings in some alternative income by auditing and registering farmers for two meat companies under contracts to the CRI. Two of the Group members were made redundant in the repositioning round carried out in 2000.

This group has not been quiet about its plight. It is continually presenting ideas to its Science Platform Leader. It works hard to maintain links with the meat and wool industries. The group leaders have made presentations on their work to the Board of the CRI on its trips around the different campuses and farms. From its inception, however, the platform structure of the organisation has impacted negatively on the group, giving it a strong message about how it does *not* fit.

To the W&S Group then, "sheep" mean "sheep" as commonly understood. But sheep are also a symbol of the survival of a certain group of farmers. With this in mind this group has devised a particular way of addressing these two concerns by focusing on animal welfare issues, but because for Government policy "sheep" mean "commodity" and therefore are associated with production and efficiency rather than "new and novel" products, applications for public research funding are not being supported. Reasonably enough perhaps, the Government sees the sheep industry as being able to support this research itself.²⁶²

Molecular Biology Unit (MBU)

The MBU is in the Animal Genomics Platform and is made up of thirteen or more scientific workers who do the molecular biology components of the research for their five different science groups. In the past sheep have been the flagship for all the MBU's research. The group is working hard to reduce its dependence on sheep and wants to move away from work on product traits, such as identification of the genes that affect fleece-weight, fibre diameter, or leanness of sheep, to applications of DNA tracing such as a saleable product that identifies a sample of DNA back to its source. The prime focus of the MBU has been on gathering DNA information to form the Sheep Gene Map. This sounds, and is, a clinical interest, but for some members of the group this clinical interest is underpinned by more human interests. Eric, a member of the MBU tells his story:

... right now what would make me feel good would be if I could find a gene for facial eczema. The first case of facial eczema was in about 1887. Now its 2000. We've had that problem for 120 years. We are putting up with it. Other countries don't have that problem because the fungus that causes it is not found there ... and our company and our Government are saying that since it's only a NZ problem, if we had a great discovery, it doesn't generate money for [the CRI] or NZ, because you can't sell it overseas ... I would have so much satisfaction if I can do something which the farmers have been putting up with [for so long]. So that is more on the sentimental side because I know the historical aspect of it ... when we first discovered a ... gene could be involved in it, we tried to patent it. The lawyer

²⁶² Business expenditure on R&D (BERD) as a percentage of GDP was 0.31% in 1999/2000 compared with the OECD average of 1.53%. This is actually a slight drop from 0.32% in 1997/1998 though its actual value increased by 3.7% (MoRST, 2002).

said, is it worth it? \$15,000 a year for the patent and how much can we generate from the patent? We come up with no profit, you see...

The MBU's recent work on the Inverdale gene responsible for multiple births and sterility in sheep (Galloway *et al.*, 2000) has been publicised nationally and was published in *Nature Genetics*, the journal with the most status in the molecular biology field. Another group in the MBU is working on the Booroola gene which also affects fertility, and others are working on leanness as a genetic trait, and the genetic resistance of sheep to internal parasites.

How does this group continue to obtain funding in the present environment? It focuses on how the sheep genetic map is very closely related to the human gene map. It is argued that the sheep map is much closer than the "mouse map" and most people looking at human health issues use mice. This link to human health issues and human reproduction is emphasised in projects. For example, the way in which facial eczema damages the liver is of interest in human medicine.

The science groups that make up the MBU have no funding problems but are aware that they are riding the wave of interest on the part of biotechnology industries in genomics, and the belief that this is one of the areas of research that distinguishes a knowledge society from others (Hodgson, 2000d). As Frank, a scientist in the MBU, said,

... at the moment the molecular stuff seems to be the winner, but that's just the flavour of the month. I mean, I know the sustainable people think that they're not flavour of the month, but a few more Greens in Parliament and they'll all be the flavour of the month. I just realise now that even from the Government down, it's in-words that are the flavour of the month.

To the scientists in the MBU sheep are the means by which its members can contribute to answering the question that so fascinates humankind – our genetic make-up and its implications for our health (Nelkin and Lindee, 1995) - while still helping farmers. The work of molecular biology is the focus of the technical staff.

Microbial Control Group (MCG)

The Microbial Control Group of fourteen members at the time of interviewing, has had a long interest in grass grub and has been established through the drive of one person, an entomologist, and a self confessed atheist, who told me, "God must love beetles because he made so many of them". Like the fungus that causes facial eczema, grass grubs are endemic to New Zealand. Grass grubs affect the production of ryegrass by eating away at the roots. Sheep eat ryegrass. But does one ever hear sheep being mentioned by any members of this group? No. Their work has been positioned in the area of the biological control of pests and the protection of the environment (FRST programme title: Pest Management Technologies for Enhanced Environmental and Product Quality). The programme description mentions that:

... the research will assist New Zealand's primary industries in realising their increasing economic potential. Management systems will be based on beneficial organisms and related gene products; the latter will provide the foundation for planned new, advanced biological industries.

This group has been very successful at acquiring funding and it has not found it necessary to make a link to sheep. A formulation chemist²⁶³ in the MCG is developing innovative methods for placing a bacterial biological control agent in soil to control grass grub. His work has implications far beyond grass grub because pharmaceutical companies all around the world are interested in finding better ways of storing bacteria.²⁶⁴ The MCG also has internal CRI funding for this formulation work because of its potential for intellectual property (IP), and potential for profit from licensing and making products of interest to the biotechnology industry. This aspect of the Group's work is well supported by the CRI's Strategic Plan for 2000-2003. The Group has also moved into using molecular biology for the study of pathogenic bacteria in soil, hence making the most of the present international focus on such DNA technology. Biosecurity is playing an increasingly greater part in the Group's work. This area is of great strategic concern to New Zealand as it tries to protect New Zealand's isolation from such things as foot and mouth disease and potential insect pests.

To scientists in the MCG sheep, are completely invisible, as demonstrated by the above description of their work, despite the fact that the work on grass grub is directly relevant to New Zealand's pastoral sector. The MCG is just not interested in sheep. The leader of the Platform in which this group is located, reflected the views of the Group when he told me, "I'm not an agriculturalist. I don't like farms much." Another scientist in the Group said that farms "are places of unspeakable filth and cruelty". The scientists in this Group are quite clear that their interest lies in science not agriculture.

Endophyte Group (E-group)

My final case study, also very much concerned with sheep, is the Endophyte Group (E-Group). This is a true multidisciplinary group informally drawn together by interest in endophyte²⁶⁵, a fungus in ryegrass, which causes ryegrass staggers and heat stress in animals, and also confers some insect protection on the grass. Endophyte, as the cause of ryegrass staggers, was discovered by one of the researchers in this Group through his observations of sheep in an unrelated experiment. For the E-Group, sheep are experimental units used to test different strains of endophyte.

The E-Group has developed techniques for the inoculation and storage of grass seed containing different endophytes and this has produced many saleable (and patentable) technology products for both the New Zealand and overseas markets. Endophyte affects the efficiency of the production of meat, wool, and dairy products. This Group does not have to be so concerned about the risk of interpreting sheep as a commodity, because of its commercial relationships with seed companies, both internationally and locally. The Group also promotes the impact of endophyte on

²⁶³ A formulation chemist works on ways of making a saleable product from a scientific product. This product has to have a reasonable shelf life, be able to be produced to a consistent standard in large quantities at a price the user can afford, and be able to be applied in a form that is practical to the user.

²⁶⁴ This offshoot was completely unanticipated. The patent attorney thought of it. The MCG had 5 patents pending in early 2001.

²⁶⁵ Because of this informal nature it is difficult to say how many staff are in this group. I interviewed thirteen but only about three of these could be considered to be working full-time on endophyte. Three of those interviewed actually worked with sheep. The rest were in laboratory (biochemists, entomologists, mycologists) or plant-based research (agronomists, plant breeders).

animal health, and endophyte's potential as a "non-tariff barrier to market access" (FRST Proposal 2001: Forage and Symbiont Genomes).

To further the exploration on other properties of endophyte, the E-Group is also using the tools of molecular biology, hoping to exploit the interest in this area. This aspect of its work, which does not need to mention sheep, is successful in receiving public funding and also involves collaboration with a university (FRST Programme: Genomics of Plant-fungal Relationships). Such collaborations are a requested part of Government science policy.

The E-Group is discovering that it enjoys its relationships with commercial clients because it is able to negotiate with them in a satisfying and rewarding way and demonstrate the skills and potential its members have to contribute something useful to those clients. As Fred said:

I get satisfaction from working more recently – you know, the discussions we are having with private companies that are funding aspects of our work - working out what they want, hearing them say what they want and developing a programme that meets their needs and fits within our parameters.

This two-way accountability is more satisfying to E-Group members than the one way, report-writing, accountability experienced in their relationships with the Foundation, and the continual policy changes associated with Government funding.

The profits generated by the E-Group could fund its future work: maintaining the endophyte research, improving present products, and studying all the many other aspects of the endophyte-plant-animal interaction yet to be explored, which, incidentally, may be a rich source of future products. But the E-Group feels there are signals from corporate office that it may wish to use the profits for other research of a higher organisational priority. This makes group members feel insecure and indicates that even though the E-Group is in harmony with the organisational strategic direction, that is no guarantee of organisational support in the future.

To members of the E-Group, sheep are part of the way they can study something that fascinates them – a fungus that is part of an animal-plant interaction. Almost incidentally this subject has become a way in which they can produce IP and products for both local and international markets. They have discovered they enjoy the relationships this brings and by increasing their commercial contracts they hope to make themselves more independent of organisational and Government policies.

Discussion

All the groups studied have something to do with sheep in one way or another. Only in the case of the W&S Group, however, is the meaning given them attached to the animals we see on our farmland. The W&S Group is interested in sheep as animals with rights, and also as a symbol of the survival of a particular group of farmers and a way of life in New Zealand. Hence this group has no room for negotiation except by moving into other areas of research that do not elicit the same motivations of its members. The present organisational and political structures have been particularly difficult for them to negotiate and they are suspended in the vacuum created when Government looks to industry to pick up funding on efficiency and commodity production. As industry dithers, this group is losing people with skills and expertise in these areas of research.

The MBU is exploiting as much as possible the close relationship between the human and sheep DNA maps. In the case of this group, the meaning of sheep as a

gene map has placed its members at the forefront of this global interest and enabled them to gain international contracts against global competition:

I'm very proud of the fact that we've managed to take – have you heard of the [American] Beta Company? We've taken business away from them, and we've just recently taken business away from GammaCo – you know, that company in Auckland.²⁶⁶ (Bert)

This image of the organisation as able to compete with well-known biotechnology companies is very important to the CRI.

Work on the sheep gene map has implications for research on human health, which can be used to take the emphasis away from agriculture. This emphasis is not to the liking of at least one scientist in the MBU who said:

We are not here to feed people ... and this is why it is very hard in agriculture to get funding because funding comes from rich people. Rich people will be the last on this earth to run out of food. So food has never been their greatest fear. And therefore these people are not going to put any money into agriculture because they never die from hunger. But these people will die from other things ... so that's where they put it – medicine –

This respondent was observing that as people become concerned about living healthier and longer lives, so research is increasingly focused on human health. Products like nutraceuticals which could come from sheep, are indicators of New Zealand entering a knowledge economy and society (Hodgson, 2000d).

The MCG gives no indication that its research programme has anything whatsoever to do with sheep. For this Group, sheep are invisible. This Group knows the climate of the Foundation well and is aware that this climate is always going to shift. Its tactic of keeping its research as wide open as possible, thus allowing it to adjust to trends, has paid off in the past. Formulation work by the MCG is being exploited because it has produced some potentially profitable patents, demonstrating to the Government and the organisation that this group is contributing to the “knowledge society”.

For the E-Group sheep are experimental units on which it can test its science and its potentially saleable products, but when one of its members says he also has an interest in “making life better for animals”, then in this sense the E-Group is similar to the W&S Group in its concerns. One of the E-Group's products, licensed to an overseas company, has the potential to bring in millions of dollars annually, but the E-Group still feels the insecurity of the present political and organisational environment, and the lack of assurance that the research of the group as a whole will be able to be maintained. This has encouraged the E-Group to seek more of its funding in commercial areas which would make it more independent of Government policy and less exposed to possible organisational interference.

The present interest and fascination in gene technology has been a common way for all the groups, except the W&S Group, to present themselves as in tune with current funding priorities. (The W&S Group may have been able to exploit this more if it had been placed in another Platform at the time of restructuring.)

The CRI places importance on acquiring patents which all of the groups, except the W&S Group, have succeeded in acquiring so far. It is not possible to patent the sort of knowledge the W&S Group is producing. Hence all groups, except the W&S Group, are able to compete in the international market for IP.

²⁶⁶Pseudonyms are also used for company names.

Conclusion

All the science groups studied exhibit a strong wish to continue to work in their chosen area of scientific research and show a strong commitment to it. I have used the different meanings sheep have to each group to illustrate some of the strategies they have used to make this wish a reality. In the case of two groups (MBU, MCG) their success in doing so has given them greater power to negotiate within the internal organisational environment. The E-Group is seeking to make itself less dependent on Government funding and organisational support by increasing its commercial funding. In the case of the W&S Group, the combined impact of Government policy and its perceptions of sheep as commodities, and the maturity of their science, has been too strong, putting their survival at risk.

Returning briefly to Akrich's (1992, 1995) works on "representations", my example of "sheep as object" suggests that scientists construct different representations of sheep in their research programmes in order to meet their ideas of what FRST requires. In other words their research has become focused on what the funder wants, rather than the needs and requirements of the end users of their research. This illustrates an inherent weakness of a funding system that supports Government's interest in international markets at the expense of the local. It also illustrates further the fragile nature of such directed research, as Government policy is open to continual change. As Frank, one of my respondents, reminds us, it would only take a shift in power towards the Greens for the whole research agenda to change.²⁶⁷

While the emphasis in this paper is on the role of "agency", the data shows that actors are coming to terms with, rather than challenging, structures. All groups demonstrate that changing the funding structures is perceived to be beyond their control. Each group has to negotiate the structures – find a way through and/or around them. As Harry said, "We pander to deafened ears basically, whether it's a politician or a CEO." There is the understanding from past experience that structures are going to change because Government policy is always changing, but such change will not be the result of input from science groups (or the CRI).

According to Giddens, "structure is not to be equated with constraint but is always both constraining and enabling" (1984, p.25). Without public funding, none of these groups would exist. However, the way in which the Foundation and the CRI implement Government policy constrains the ways in which these groups interpret and communicate the work they do, and the choices they make about the directions of their work. At the same time, three of the science groups studied (and the fourth to a lesser extent), indicate they have sufficient confidence in their own autonomy to find ways of maximising their control over the work they do in their belief that they can make a difference. The structures resulting from Government policy may have influenced the way the groups represent and understand what they do, but the variety of responses indicates the structures have not completely dictated their actions. There has been some space for covert negotiation.

Thus, my observations illustrate that when structures are put in place, people negotiate them in their different ways, consciously or unconsciously, in order to satisfy their own objectives. Much of life, like much of science, is a subversive activity. Scientific research is a long-term enterprise (Hill and Turpin, 1994), poorly

²⁶⁷ Ironically, I have recently been told that research may be swinging back to sheep with the realisation of the importance of the agricultural sector to New Zealand's economic well-being.

adapted to cope with quixotic shifts in Government policy or corporate strategies. The present environment jeopardises research programmes aiming to solve problems considered by scientists and/or the agricultural sector to be important for farming, science and New Zealand. Scientists, quite naturally, seek ways of sustaining the projects which they consider important, personally interesting, challenging, and vital to their survival for at least another funding round.

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Appendix D: Signs and symbols of status

Indicators of hierarchy

- Physical set up of space. “I’ve always shared an office” (Brent, technical worker). This is an interesting contradiction on hierarchy and perception because I found that when I was sharing an office it actually cost more per person because the rent was paid for floor space area and we actually had more per person than if we’d been in individual offices.
- A “plan driven approach” by the CEO (Dave, scientist).
- “Clayton’s consultation” (Dave, scientist).
- Resistance – indicates feeling that things are imposed.
- Responsibilities for others.
- Financial accountability – spending limits etc.
- Hierarchy of ‘listening up’ and ‘communication’.
- Want recognition and value to come from people further up in hierarchy.

Indicators of low hierarchical position within the organisation:

- Passivity – doing rather than thinking.
- Do more repetitious work.
- Always available.
- Spend a lot of time listening.

Indicators of high hierarchical position within the organisation:

- Get overseas more often.
- Spend more time at a desk.
- Spend more time in planes.
- If in corporate wear a tie (and/or suit) or for women – more likely into power dressing (suit), but if high in science hierarchy go out of the way to look like everyone else? In Grasslands the higher you were in the science hierarchy the more likely you were to favour the “dark shirt” look mainly with no tie if it was a long sleeved skivvy type.
- Have more women running around after you – PAs, other support staff.
- Have an office of your own (after all spend more time in it! – rational explanation) – exception MCG.
- Perceived by others to:
 - Always be busy.
 - Have lots of pressure.
 - Have lots of responsibilities (Fred, technical staff).
- Inaccessibility. Have such a full diary that can only find time for a meeting (in the next month) when request comes from someone higher in hierarchy
- Speak at campus meetings. Impact: 1) gives ‘flavour’ to the site identity as perceived by outsiders; 2) indicates to those lower in the hierarchy what the “acceptable” viewpoint is.
- Have a career rather than a job.

Science hierarchy

- Job labels – part of employment/pay scale system (wage worker, technician, research associate, scientist).
- Talk of those “up there” or “high scientists”.
- Do more “pure” science – e.g., have successful Marsden Fund applications, proud to be called a “dinosaur”?
- Publish in refereed journals (preferably overseas ones) rather than make conference presentations rather than make presentations to sector groups or at field days.
- Hierarchy of credibility – “know” more of what’s worth knowing the further up you are in science. E.g., do you “take notice of” Ray (no PhD) or Matt (PhD)? (Fits the science hierarchy rather than the management hierarchy. Those at top of science hierarchy – as scientists, presumably know more about something because the flow of information is to them. However, in the management hierarchy – which can be within science - the managers are perhaps seen to know more about some things because of the information to hand, but they are not seen as knowing more about the things that are important to science staff.
- Hierarchy of responsibility for funding, dissemination etc.
- Hierarchy of intelligence – “I ask him anything and he’s just got an encyclopaedic knowledge of it” (Brent, technical worker).
- If you have an untidy office the higher up the hierarchy you are the less people will make rude comments about it.
- And balancing this – an emphasis on tidiness indicates lower in hierarchy – seems to be related to technician background (though W&S group all seem to be tidy).
- “I believe a technician is beavering away in the background” (Brent, technical worker).
- “I’m a do-er” (Brent, technical worker). Doing rather than thinking.
- Physically demanding.
- Physically dangerous (risks outdoors – sampling etc; risks indoors in labs – radioactive materials etc) e.g., Brent, technical worker.
- Sometimes physically repulsive (sampling animal faeces, animal rumens, rotting grass).
- Manual labour involved.
- More time spent outdoors – field work.
- Wage workers don’t have names.
- Those lower down may see themselves as a “responder”. “I tend to respond at a very local level to my immediate managers and trust that they are doing the things that are higher up that will keep the whole thing sustaining” (Grant, technical worker).
- The best policy is to “keep your head down and your nose clean”.
- The more routine your work is the lower down the hierarchy you are.

Appendix E: Performance appraisal form

(Included by permission of the manager of AgResearch Human Resources Advisors)

Individual Planning & Performance Review

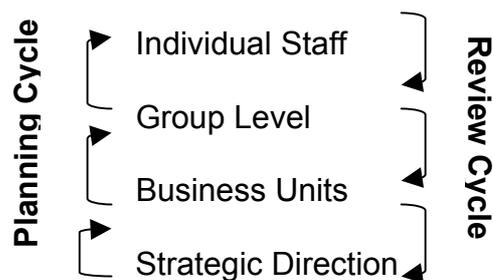
Name:

Position:

Location:

Team Leader/Manager:

Performance Year:



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SECTION A – Planning and Review agreed and completed by staff member and team leader

[Note that this section covers 2 pages in the 'real' document.]

1. At the beginning of the planning year agree on the key areas of focus and weight their importance. The weightings need to add up to a total of 100%.
2. Agree and list objectives for the coming year – these should be directly related to your science platform or support group or commercial groups annual plan.
3. Objectives should be SMART – Specific, Measurable, Attainable, Results oriented, Time-bound.
4. At 6 month review note progress and areas needing attention.
5. At 12 months complete full review of years performance.

	Objectives	6 month review comments	12 month review comments		
Achievement Area 1	1.			1	Improvement Needed
	2.			2	
	3.			3	
% weighting				4	Exceeded Expectation
				5	
Achievement Area 2	1.			1	Improvement Needed
	2.			2	
	3.			3	
% weighting				4	Exceeded Expectation
				5	
Achievement Area 3	1.			1	Improvement Needed
	2.			2	
	3.			3	
% weighting				4	Exceeded Expectation
				5	
Achievement Area 4	1.			1	Improvement Needed
	2.			2	
	3.			3	
% weighting				4	Exceeded Expectation
				5	
Achievement Area 5	1.			1	Improvement Needed
	2.			2	
	3.			3	
% weighting				4	Exceeded Expectation
				5	

SECTION B – Behaviours and Competencies

- The following competencies are implicit in AgResearch's Vision and Values. They reflect the way we go about our business. Using the examples consider actual behaviour demonstrated over the past 12 months and agree the most appropriate descriptor. **N** – Novice; **D** – Developer; **C** – Competent; **P** – Proficient; **E** – Exceptional
- If staff wish to have input from others please let your manager know.

Personal Leadership	Comment										
<ul style="list-style-type: none"> Committed to company strategy Demonstrates company values Positively influences others to reach organisational roles [sic] Consistently strives for excellence Views change as positive and as an opportunity Takes responsibility for own decisions and actions 											
Assessment											
<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">N</td> <td style="width: 20%;">D</td> <td style="width: 20%;">C</td> <td style="width: 20%;">P</td> <td style="width: 20%;">E</td> </tr> <tr> <td>Novice</td> <td></td> <td></td> <td></td> <td>Exceptional</td> </tr> </table>		N	D	C	P	E	Novice				Exceptional
N	D	C	P	E							
Novice				Exceptional							

Communication	Comment										
<ul style="list-style-type: none"> Listens actively and checks for understanding Contributes own ideas freely Communicates clearly and sensitively to both individuals and groups Keeps others well informed of work progress Presents well researched and professionally written material 											
Assessment											
<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">N</td> <td style="width: 20%;">D</td> <td style="width: 20%;">C</td> <td style="width: 20%;">P</td> <td style="width: 20%;">E</td> </tr> <tr> <td>Novice</td> <td></td> <td></td> <td></td> <td>Exceptional</td> </tr> </table>		N	D	C	P	E	Novice				Exceptional
N	D	C	P	E							
Novice				Exceptional							

Teamwork	Comment										
<ul style="list-style-type: none"> Ensures own goals are in line with team objectives Readily supports colleagues Treats others with honesty and integrity. Builds good working relationships Encourages others to meet and exceed their objectives Eagerly shares information and ideas to accomplish mutual goals 											
Assessment											
<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">N</td> <td style="width: 20%;">D</td> <td style="width: 20%;">C</td> <td style="width: 20%;">P</td> <td style="width: 20%;">E</td> </tr> <tr> <td>Novice</td> <td></td> <td></td> <td></td> <td>Exceptional</td> </tr> </table>		N	D	C	P	E	Novice				Exceptional
N	D	C	P	E							
Novice				Exceptional							

Smart Work Practices	Comment										
<ul style="list-style-type: none"> Sets clear goals and high standards for delivery Actively promotes "continuous improvement" and readily shares new ideas and suggestions Utilises technology to best advantage Uses time well and meets deadlines Understands and follows AgResearch Best Practice 											
Assessment											
<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">N</td> <td style="width: 20%;">D</td> <td style="width: 20%;">C</td> <td style="width: 20%;">P</td> <td style="width: 20%;">E</td> </tr> <tr> <td>Novice</td> <td></td> <td></td> <td></td> <td>Exceptional</td> </tr> </table>		N	D	C	P	E	Novice				Exceptional
N	D	C	P	E							
Novice				Exceptional							

SECTION C – Science Capabilities

- Update science capability register and record new capabilities to be developed in the next 12 months.
- New capabilities developed in current year. _____

Capability register updated

- Capabilities for development in next 12 months discussed and identified. _____

SECTION D1 – Career Direction and Goals completed by staff member

What are your career development goals?	What steps are you taking to achieving these?
---	---

What can AgResearch do to assist you?

Indicate specific positions you are interested in gaining experience in, and whether you are able to shift location.
--

SECTION D2 – Training and Development agreed and completed by staff member and team leader

Discuss individuals potential to achieve their career aspirations. Identify training and development needs to achieve annual objectives and enhance career opportunities. Detail what is to be done by whom and by when. Consider internal training programmes, external programmes, one on one coaching, university courses, etc.

Current Year	Who	When
What and How		

1-3 Years	Who	When
What and How		

SECTION E – Summary Assessment

Manager’s Comments

Signed _____

Date _____

Employee’s Comments

Signed _____

Date _____

Science Leader or GM’s Comments

Signed _____

Date _____

Appendix F: Copy of letter to AgResearch on completion of thesis

11 Virtue Place
Harewood
Christchurch

Chief Executive Officer
AgResearch Ltd
Ruakura Research Centre
East Street, Private Bag 3115
Hamilton

25 July 2003

Dear Dr Steele,

I wish to thank AgResearch for the support it gave me to carry out my PhD study, which is now successfully completed. Without the award of an AgResearch PhD scholarship from the years 1998 to 2001, I would never have started. I thank Dr John Lancashire, then General Manager of the Sustainable Production Division, for his advocacy on my behalf in this regard. As an employee on study leave from 1999 to 2000, I was provided with the resources and privileges of an ordinary employee, and access to AgResearch staff for my study. Dr Mark Paine, then of the Social Science Group, gave me a small amount of clerical support, and acted as mentor and adviser/supervisor.

As my proposed research changed from being a component in a proposed FRST funded programme on the impact of dairying in the South Island to a study of scientists and scientific technical workers, Dr John Hay gave it his support. He dutifully read my quarterly reports and commented on them. Later this task fell to Dr Gavin Sheath. I thank Dr Stephen Goldson as the then leader of the Lincoln campus, and Drs Andy Bray and Trevor Jackson for approval to interview the staff of the Wool and Skin Biology Group and the Microbial Control Group, respectively. I thank Dr John Hay for approval to interview those staff working on Endophyte, and Dr Alan Crawford, as a Science Platform Leader, for allowing me to interview staff working in the Molecular Biology Unit at the University of Otago. Such approvals did not mean staff had to be part of my work. Individual permission was also gained from all participants. I also received permission on a case by case basis for observations of organisational or group meetings. I wish to thank all staff I came across in the period of my research who were curious and interested in it and supported me.

In the first year of my AgResearch Scholarship I was required by Lincoln University to fulfil a course of study as a prerequisite to PhD study. Two further years of AgResearch support followed. On the termination of this I was awarded a Lincoln University scholarship for a year and had the support of postgraduate funding within the Environment, Society and Design Division. Another year of study followed and

the thesis was completed on 10 March 2003 and examined and passed on 4 July 2003 at an oral. Copies of the thesis will be placed in the Lincoln University library.

I hope that my thesis, titled 'Compliance at work: Protecting identity and science practice under corporatisation', contributes to an understanding of scientific workers and the practice of science in this period of New Zealand's history. A copy of the thesis is enclosed for AgResearch. I thank AgResearch for the opportunity it provided for me to gain this qualification and pursue this interest in how people make meaning at work.

Yours sincerely,

Lesley M. Hunt