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**Accounting in Action
in the New Zealand Health Reform Process:
An Analysis
Informed by a Specific Case Study of a Major Health
Provider**

A Thesis
submitted in fulfilment of the requirements
of the Degree of Doctor of Philosophy
at the
University of Waikato

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Abstract

This thesis constitutes an empirical study of accounting in action, focussing attention on patient based cost systems. The thesis contributes an in depth understanding of the mobilisation of casemix and related information systems at a large regional hospital, Health Waikato (HW), in the centre of the North Island of New Zealand. The field research consisted of primarily unstructured and semi-structured interviews and documentary analysis. I present the research in the later part of the thesis from a constructionist, interpretive perspective. This consists of richly descriptive case studies of aspects of the change process as it has impacted upon the research site. The themes of the analysis are related, at the macro level, to the resurrection of neoclassical economics policies and the relative ascendancy of free market solutions. The process through which areas of knowledge and in this case particularly public policy become problematised is explicated.

My research attempts to describe the experiences and perceptions of medical and managerial/financial staff at a work unit level within a single hospital. A part of this process has involved investigation of the implementation of traditional accounting technologies in unfamiliar environments. The research is primarily concerned to elaborate upon the social context of accounting systems implementation using theoretical insights derived from Latour (particularly: 1987, 1993). The research has sought to explicate the change process as a process of translation. Traditional accounting techniques have been explicated as "black box" technology with which the organisation has been redefined in economic terms.

In the study, the power of accounting in the translation and inscription of data (the fabrication of accounting systems per Preston et al, 1992), is central to understanding the role of accounting systems as technology. Drawing from the work of Latour helps to provide a frame of reference to allow an assimilation of disparate changes and influences as they have come to affect the health sector at a national level, within New Zealand, and also at an organisational level, within a large regional health provider. The research contributes in explicating the relevance of Latour's rules of method, and underlying theoretical framework for an organisational analysis focusing upon accounting. Latour uses a very general conception of technology which encompasses anything emerging from what he terms the process of "translation". In this context Latour uses the term to refer to the production or "fabrication"

of “quasi-objects”. This is most easily seen as consisting of the physical objects which “populate our western societies”, but for Latour also includes inscriptions and “facts/artefacts”. I regard accounting and information systems as consisting of mixtures (or perhaps “collectives”) of technological quasi-objects in this very general sense.

The focus of the research has been upon the identification of problems, the choice of accounting techniques and their implementation. Together with other devices the use of accounting techniques may be seen as a central part of the process through which change is made acceptable within the organisation. Supporters are enrolled into the change process in part by being exposed to the accounting inscriptions which are used to represent the cost and profit "reality" of their unit and the whole organisation. The research process has involved detailed investigation on a case by case basis to enable a thorough description of the accounting techniques being put in place.

The title of the thesis is based on Latour (1987) “Science in Action”. Conventions developed in Actor Network Theory might suggest my title would be better understood as “Accounting as Actant” but it seems to me that Latour was clearly aware of this same point when he chose this title for his book.

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Chapter 1: Introduction

If we want to make sense of the glue that sometimes, and precariously, holds both us and our societies together then we can no longer afford to ignore the material heterogeneity of arrangements such as accounting systems. (Law, 1991, p.186)

...for a RM [Resource Management] system to get off the ground and be sustained requires a network to hold together - including both human and nonhuman elements. (Bloomfield et. al., 1992, p.202)

1.1 Introduction

The purpose of my thesis is to contribute to an understanding the role of accounting and budgeting systems. The immediate context of the research is the application of a casemix accounting system in a large regional health provider in New Zealand. The broader context is that of the sweeping health reform policies which have been applied in New Zealand since the late 1980s.

My research methodology is informed by theorists who have contributed to the sociology of scientific knowledge (SSK) and Actor Network Theory (ANT). I have drawn most heavily from Latour. The particular interest of my research is to illuminate our appreciation of accounting systems as technological objects. The role which accounting systems come to play in the processes of change in our public sector and commercial institutions is of very considerable moment. This thesis seeks to clarify the way in which accounting comes to play a part in the plans of policy makers and managers in their attempts to convince others of the 'rightness' of their prescriptions for change.

Accounting systems are seen to play a central and crucially constitutive function in the establishment of system/social changes within organisations. But this role is not the simple implementation of a new information system which provides an increased emphasis on rationality in decision making, nor merely the oppressive control and monitoring which might

be indicative of a more critical view (Chua and Degeling 1993). Accounting systems may also be seen as important allies by human actors who are seeking to convince others of their ideas. Perhaps more crucially such accounting systems, not only promote a particular view of the activities of an organisation or a subunit, but in their very implementation and operation 'mobilise' other organisational members in a particular direction. People are 'sucked in' to the accounting system, either in the more conventional manner, because they are constrained to use the numbers the system reports, or more surreptitiously, because their operational actions and activities are what contributes data to the system.

1.2 How the Research Developed

I have long found it difficult to explain the apparent popularity of accounting as a career. I have also continued to be surprised at the size of accounting firms and the apparent success of accountants to expand the demand for their services. Accounting systems seem to have a remarkably strong role in modern society in spite of what seem significant problems of the "accuracy" and "effectiveness" of accounting numbers.

I learnt as a student of accounting, at school and university, through the seventies: that accounting figures were problematic; that one needed to take great care about how far one should go in extrapolating interpretations from accounting ratios; that when looking at accounting for decision making one must be very certain that you had the right costs for the purpose. Later this still appeared to be true in taking and passing professional examinations. Still later it was even more true of studying for and writing for a masters degree in accounting.

My characterisation of accounting above is what I believed. But it does not dispel the fact that, at its core, my love of accounting was because of its certainty and what at times seemed its perverse logic. It was natural then, perhaps, that as my research interest developed in this thesis, that I should be drawn to looking deeply at the affects of accounting systems themselves.

Hopwood (1978) argued some time ago that we know very little about how accounting functions in organisational contexts. He called for research into the actual functioning of accounting. A large literature has developed in response to such calls (see also Burchell et al,

1980; Kaplan, 1984, 1986), to learn more about accounting in practice. Nevertheless we still remain in need of theoretical explanations of the pervasive influence of accounting in action (Chua, 1995). As the empirical literature has developed one critique has been that researchers have been too eager to apply various social theories and particular theorists to accounting rather than developing theories of accounting (Scapens 1990 and particularly Humphrey and Scapens, 1996: see also rejoinders by Llewellyn, 1992; Scapens, 1992).

In trying to develop a thesis topic, a first idea was to research the difference between accounting as espoused (eg., as in ABC literature) and as it was practiced in local organisations. Typically, such studies have been conducted in manufacturing settings. In my case I became attracted to a hospital setting (see discussion regarding access in chapter 4, section 4.2.1.).

During my research it became increasingly apparent that the accounting systems in the health sector were being transformed to reflect more closely those associated with a typical manufacturing environment. The move towards 'patient-based' costing systems was accompanied by a new interpretation of hospitals as 'manufacturing' units, with measurable outputs that could be purchased. The integration of an accounting logic into a place where it had been excluded was interesting. It raised questions about the increasing influence and pervasiveness of accounting in modern institutions. The rapidly changing 'culture' of NZ hospitals seemed to provide an excellent site for fieldwork attempting to understand the way in which accounting played an active role in such changes. How are accounting systems introduced; how are people persuaded to use them; what resistance is mounted?

It was with such questions in mind that I began fieldwork. The original aim was expanded to a wider appreciation of the role of accounting in effecting change. To my mind explanations of the often central role accounting information plays in organisations and society cannot be explained away without always leaving some mystery. In being drawn to explain this uncertainty I found myself increasingly drawn to the need to engage closely with accounting systems. It seemed natural then that I needed to mobilise a field research methodology (the use of case research is explained in detail in chapter 4). In beginning the research such an in depth approach in, as it turned out, a single organisation would be most appropriate.

Case research would enable me to go to the level of detail in feel appropriate to the

explications I desire. Later as I will explain in more detail in chapter 4, section 4.2, a case approach combined with a view of accounting as technology became the way forward for my research.

1.3 The Problematisation of Health Issues

The thesis describes the process by which issues are identified as suitable for attention. This process of 'problematisation' is examined at the national level with respect to the selection of the health sector for attention, and the subsequent reform of the health sector institutions by the 4th Labour and subsequent National governments. The problematisation process also plays a significant role at the organisational level and within individual organisations. In the case of this research such problematisations at the organisational or unit level have most notably taken the form of the use of rhetoric in the mobilisation of human and nonhuman allies to convince other organisational members of the need to adopt more market based interpretations of the performance of their activities and of the organisation. Such problematisation where successful would then seek to promote a positive view of casemix accounting and related accounting systems as offering the required solutions to such problems.

At the national level the use of inscriptions resulting from the accounting for health services can be seen to play a role in a much broader process which effectively problematised the nature of the health sector in general and notions of a publicly administered health system in particular. Notions of the efficiency of private sector management techniques were widely promoted as suitable to deal with 'established' inefficiencies in the health system. Views of the universal availability of 'free' health services, accessible to all New Zealanders were attacked in a number of ways, one of which involved the establishment of a 'Core' Health Services Committee (CSC) which would seek to establish a list of those services which might 'reasonably' be made available universally (National Advisory Committee, 1992a, 1992b, 1992c, 1993). Though the CSC has not been successful in producing such a list of health services, its activities, combined with the actions of others, has led to a significant perceived change in the public attitude to the availability of health services.

At the organisational level various devices have been brought to bear, within the hospital, to problematise issues related to the provision of services. These issues have included the scope

of operations of the institution, the provision of certain clinical and clinical support services and with general operational efficiency.

The institution studied was established along with 22 other public health providers as a Crown Health Enterprise (CHE). Most of the larger CHEs were 'commercialised' as loss making organisations though with new management who were to run 'make a profit' as soon as possible. The continuing losses which these institutions made over the next few years were later used as a device for increasing the pressure on staff for cost savings. Management underwent significant restructuring at the time the CHEs were established, new people with private sector experiences and attitudes were frequently recruited. These new managers were very keen amongst other things to promote the need for 'management information'. A crucial element of the new management information was to be the reporting and monitoring of clinical volumes and efficiencies through a casemix accounting system.

1.4 Providing Rich Descriptions of Accounting in Action

The thesis seeks to explicate the processes involved in constructing and reconstructing budgeting systems within a large New Zealand health provider. The processes through which accounting procedures and systems are constructed are rarely made explicit. The ability to follow the implementation of a sophisticated casemix accounting system offers an excellent research opportunity to study the manner by which accounting and budgeting systems are constructed or fabricated.

Rich descriptions of the nature of accounting system implementation are provided from in depth analysis of research experiences in a number of subunits within the hospital. The descriptions seek to explain the involvement of accounting system as allies in support of organisational change. It is partly due to the ability of accounting to provide convincing inscriptions and representations in supporting particular ways of seeing the organisation which is important in dealing with the processes of change. Such inscriptions are inherently partial.

Accounting and budgeting systems within hospitals are increasingly affected by changing attitudes to the public provision of health care; perceptions of the efficiency and cost of health care; changes in medical technological and ideas about appropriate ways to manage hospitals.

The view that is taken of these preconditions may be influential in affecting how one might conceptualise the development of particular accounting and budgeting possibilities.

The thesis seeks to examine both how health policy changes influence accounting possibilities and what forms such accounting takes. Later chapters (7 through 9) trace the path of these accounting system developments within one large regional health provider to their acceptance as unproblematic and uncontested technologies of management. The implementation of systems of casemix accounting at the Health Waikato CHE is described in order to illustrate the effects of such accounting technology. The approach taken to the research in this study is closely related to that adopted by Hopwood in describing the analysis of the process of accounting change:

Rather than either assuming what accounting must be or deriving any retrospective view of the necessity of what happened, the cases [analysed] will demonstrate the need for an appreciation of change to be based on a more detailed awareness of the means through which accounting comes to be embedded within an organization and the processes which provide a basis for accounting solutions to be related to other organizational problems and phenomena (Hopwood, 1987, p.227).

While Hopwood's main concern is the constitutive role of accounting this thesis concentrates on the 'processes by which people attempt to enmesh accounting innovations within the functioning of organizations and the processes by which new patterns of language, meaning and significance emerge through the fabrication of accounting and budgeting systems ' (Preston et al, 1992, p.562)

1.5 Accounting as Technology

The ability to [re]present accounting as technology is a critical part of understanding the role played by accounting in the problematisation and 'enrolment' processes (Chua, 1995). A concern of this research is to use this metaphor of accounting as technology to assist us to understand and make sense of accounting and budgeting systems.

The spread of ideas and their conversion to accepted facts is analysed by Latour (1987a) as a rhetorical process. Statements are in the 'hands of later users', the fate of such statements depends on how those who come later use these earlier ideas. A fact is only established as such when a following is built up which uses such ideas increasingly and without modification. If

a statement is made but is never used, if an academic paper is written but never taken up by others [never cited] then it may as well never have been written.

Fact construction is so much a collective process that an isolated person builds only dreams, claims and feelings, not facts. One of the main problems to solve is to interest someone enough to be read at all; compared to this problem, that of being believed is, so to speak, a minor task. (Latour, 1987a, p.45).

In accounting the equivalent is the acceptance of the accounting system, the spread of the system through the organisation as other users and providers of data accept the accounting technology as fact, as a 'black box' which can be accepted without modification. The networks constituted by accounting systems spread in this manner. Challenges are muted as a consequence of the strength which the network achieves at least in part as a consequence of the contribution of the many operational staff who input data to the system. The system acts to process this data and recalculate and recombine its elements in the fabrication of convincing 'inscriptions'.

While it is appropriate to conceive accounting systems as technological objects, accounting information may be regarded as inscription. It is the ability of accounting to represent and translate aspects of the organisation's environment into financial numbers which provides the key to the widespread use of accounting information. A consequence of the ability of accounting to inscribe information in this manner is to enable the 'principals' and controllers of the system to accumulate knowledge 'at the centre' and at the same time to provide convincing representations of the environment. The power of inscriptions is to enable 'action at a distance', which is prized by those who would seek to persuade, enrol and control others. In accounting Robson (1991, 1992, 1993, 1994) has developed such ideas, informed by Latour (1987a).

There is a growing literature dealing with the social implications of technology. The concern of this research is to examine how technologies are fabricated, and there is an emerging body of literature that focuses precisely on the creation of scientific facts and accepted technologies. These social studies of science and technology (e.g. Callon 1986; MacKenzie & Wajcman; 1985; Bijker et al., 1987) offer detailed examinations of what technologists and scientists do, and how they interact with each other and others to produce what will be accepted as technology.

Bruno Latour has provided an enthralling and illuminating analysis of the production of

technoscience (1987a). Technoscience is broadly defined to include society and technology, while technology may also include conceptions beyond the conventional. Preston et al., interpret Latour's conception of technoscience in the following manner:

Technology [technoscience] can be an artifact (a budget document), the processes or uses of the technology (e.g. producing and making use of a budget) and the knowledge of people in designing or operating the technology (e.g. the "know how" that specifies the relationship between predicted costs and specific activities). (Preston et al, 1992, p.562)

In following Latour it is necessary to accept a number of suppositions surrounding the nature of science and the production of facts and artifacts. Latour suggests that in order to better understand the nature of a technology we should examine the processes involved in its 'translation' or fabrication. Scientific facts and technical artifacts, such as instruments and machines, are not viewed as being part of a pre-existing natural order, simply waiting to be discovered. Facts are the result of an elaborate process of translation, which relies on the ability of a principal to bring others in to accept their conception of the issues and accept their solutions. Statements are in the hands of later users, and consequently facts are only produced when they are accepted by sufficient others. Technology only becomes established in use, if a technology or machine is not adopted by others it quickly becomes an artifact.

Latour (1987a) argues that we should study science "in action" and not ready-made science. As a consequence the emphasis of this research is on the processes through which accounting systems are developed. The thesis aims to describe the environment which surrounds the development of and implementation of a casemix accounting and budgeting system.

1.6 Objectives of the Research

The motivation of the research is to seek to explain the role and functioning of accounting in the health reform process. This is a very significant area of research, where accounting is being mobilised in a process, whereby major social and economic changes are being engineered in response to a particular world view.

The thesis examines both how health policy changes influence accounting possibilities and what forms such accounting takes. The thesis seeks to provide an understanding of accounting in practice; of accounting in action and most particularly engage with and explicate the view

of accounting as actant. I will examine in detail the implementation of accounting systems at the hospital in order to explicate organisational impact of such systems. I will seek to explain the adoption of a number of traditional accounting techniques to address issues of cost, control and unit reporting.

In depth case analysis will be used to explicate the selection and implementation of established accounting technology within a variety of different medical and support service areas within the hospital. The use of traditional accounting technology in this manner may be seen as an attempt to "enrol" supporters within the organisation by using "black boxes" (Latour, 1987a).

My research seeks to show how accounting systems become pervasive and complex networks throughout the organisation. I will show in the case chapters (7 through 10) how the influence of accounting information spreads as a result of the combined and often largely uncoordinated efforts of many actors. Organisational members increasingly provide 'accounting' data in the course of their normal work activities. Casemix data is collected as nurses record patient acuities in order to provide evidence of their daily activities. Clinicians in completing patient medical records record diagnoses which are later coded and transformed into electronic representations.

This research intends to add to theory in respect to the continued acceptance and use of conventional accounting systems. The accounting systems which are being implemented within the hospital display a number of traditional elements including: overhead allocation, product costing and divisional budget reporting. The systems being put in place are claimed to be capable of providing information of a strategic nature, covering such areas as quality management, the identification of value added versus non-value added activities, process improvement and the like. The thesis attempts to see what other explanations might be appropriate in explaining the continuing attraction of such traditional accounting systems

1.7 Overview of the Thesis

Having provided this orientation to our analysis of the implementation and construction of a budget system, we can clarify the organization of the thesis. The structure of the thesis will proceed as follows:

Chapter 2: Positioning in the Literature

This chapter will review the relevant literature within accounting and related areas of organisation theory. The intention is to situate the thesis in the accounting literature as a precursor to a more detailed consideration of the philosophical and methodological implications of Latour's "sociology of translation" and its appropriateness.

Chapter 3: Methodology

This chapter will provide a discussion of the theoretical framework which has informed the research. The chapter presents a discussion of Latour's theoretical constructs including the sociology of translation. Critiques of the sociology of translation and Actor Network Theory (ANT) are considered. Broadly this chapter will support a constructionist interpretive methodology.

Chapter 4: Method

This chapter will describe the application of Latour's rules of method to inform the research process. The discussion will show how borrowing from Latour enables the explication, description and observation of social situations within the organisation studied. The use of intensive research methods, such as case research to enable the researcher to better appreciate the nature of the process of change within organisations will be stressed.

Chapter 5: Macro - New Zealand Government Policy Post 1984: An Exercise in Problematisation

This chapter will involve a discussion of what appear to be the central features of the process of policy change over this period and the underlying influences which have been identified as motivating the policy adjustments, some of which have been of an extreme nature. These factors and events will be theorised following Callon (1986) and Latour (1987a). This will involve applying a framework of interpretation based on the concepts of Latour's sociology of translation. Material on problematisation, the state, and government will be used in order to provide a explanatory frame of reference which will enable us to make sense of the process of change in the political economy in New Zealand. The sociology of translation will be used

to explain the processes which underlie the changes and will be used to capture effects such as the role of Treasury and other institutional "allies" in the production of government policy especially after 1984.

Chapter 6: Reform of the New Zealand Health System: Problematisation, Inscription and Change

This chapter will seek to explicate the changes in the New Zealand Health sector informed by the concepts of problematisation, inscription and the construction of networks (Callon (1986) and Latour (1987a, 1993)). This will involve applying a framework of interpretation based on the concepts of Latour's sociology of translation. Material on problematisation and inscription will be incorporated into the chapter in order to provide an explanatory frame of reference which will enable us to make sense of the processes of change in the New Zealand Health Sector.

Chapter 7: The Construction of a Network at Health Waikato: The 'Towards Clinical Budgeting' Project

The chapter provides an overview of the implementation of Clinical Budgeting at the research site. The purpose of this and the following three chapters is to provide an explanation and understanding of developments in casemix related information systems at a large regional hospital, Health Waikato (HW), in the centre of the North Island of New Zealand. The themes will be explicated and theorised drawing upon the sociology of translation (Latour, 1987a). The power of accounting in the translation and inscription of data (the fabrication of accounting systems per Preston et al, 1992), will be a central theme in understanding the role of accounting systems as technology.

Chapter 8: DRG Coding, Casemix Accounting and the Sociology of Translation

The adoption of DRG coding as a central feature of the mechanisms of the health reforms in New Zealand will be examined by describing the experience of one major health provider. Attempts to bring clinicians into the management process and to control their activities are described. The collection and provision of information for management and contracting

decisions/negotiations is central to the adoption of the DRG technology. Problems associated with the introduction of and widespread implementation of the DRG coding system are discussed. In particular the part played by the DRG coding system in providing impetus to the Casemix system, in enrolling allies for Casemix and convincing people of the need for change are explicated from a theoretic perspective.

Chapter 9: The Construction of Patient Costs and The Management Reporting System

In this chapter the implementation of clinical budgeting through the Transition casemix system will be examined by describing the experiences of people within the hospital, and particularly by considering some aspects of the casemix system in detail. The design of reports to different levels of management and for differing parts of the organisation are considered along with a central feature of the patient costing system, that involving the use of 'Relative Value Units' (RVUs). These RVUs play a conventional management accounting role in the clinical budgeting system in enabling the use of standard costing and variance analysis.

Chapter 10: The Role of Accounting in the Processes of Health Reform: Providing a 'Black Box' in the Costing of Blood Products

In this chapter the application of traditional management accounting techniques to the calculation of blood product costs will be described. The provision of such product costs constitutes one element of the support or "feeder" information which is required in order that the casemix system can provide actual cost information on the "total" cost of an episode of care. Similar costing exercises were carried out in other areas of the Clinical Support Services Division, as cost data were established for such services as radiology and laboratory tests.

Chapter 11: Concluding Chapter

This chapter will provide the concluding section of the thesis. Drawing from Latour helped to provide a frame of reference to allow an assimilation of disparate changes and influences as they have come to effect the health sector at a national level, within New Zealand, and also at an organisational level, within a large regional health provider.

1.8 Concluding Comments

The central objective of the thesis is to examine and describe the creation of particular technologies of accounting. This will involve some detailed descriptions of the nature and structure of accounting systems at the hospital (Chapters 7 through 10) and the way in which these systems link different areas within the organisation. Networks will be traced in order to understand the way in which accounting spreads a calculative emphasis throughout the organisation. A related emphasis is placed on the influence which the specific accounting and budgeting packages have on changing ideas about how the organisation is to be represented and the procedures and calculations that are made possible by the technology.

While the focus of the chapters on accounting within the hospital are concerned to examine the creation of techniques and technologies of accounting in the chapters on the setting of government and health policies (chapters 5 and 6) the analysis is more concerned with the 'programmatically discourses within society as a whole' (Preston et al, 1992, p.563). The emphasis in this section of the thesis is closer to that of Miller and Rose (1992) or Miller and O'Leary (1987) and Lehman and Tinker (1987). These writers examine general discourses, institutional and hegemonic structures surrounding efficiency movements, concerns with governing society and shifts to authoritarian management. This thesis seeks like these writers to show how these programmes and national policy initiatives interconnect with accounting technologies. The overall aim is to demonstrate the crucial link between the local and the global, the need for adequate accounting technology at the level of individual organisations in order that national policy objectives might be fulfilled (Miller & O'Leary, 1987, p. 240). Such links are crucial if changes at the national level are indeed to be effected and effective at the organisational level.

The next chapter will review the relevant literature within accounting and related areas of organisation theory. The intention is to situate the thesis in the accounting literature as a precursor to a more detailed consideration of the philosophical and methodological implications of Latour's "Sociology of Translation" and its appropriateness.

Chapter 2: Positioning in the Literature

Over the years we have amassed a great body of knowledge about the corporations: for the interested student there are innumerable figures, facts, books, papers and articles, speeches, lectures, seminars and courses, studies by accountants and systems analysts and management scientists and sociologists and stockbrokers, and endless tables of statistics. Unfortunately, our understanding has not grown alongside our knowledge: indeed, the more facts they know, the more most people seem to despair of ever coming to a real understanding of the corporations, of the whole which is made up of so many complicated parts. As the need to understand these institutions grows, so the possibility of doing so recedes. (Jay, 1967, p.11)

2.1 Introduction

This chapter will provide a discussion of the relevant literature in order to situate the thesis. The chapter will proceed in the next section by considering the call for the use of an increased breadth of research methods in accounting research. The following section presents some discussion from the accounting literature on the selection of research methodology. Discussion of the contributions of accounting research to the understanding of the role of accounting in the public sector, and public sector change will be covered in the fourth section of the chapter. This is followed by two sections which consider the contribution of interpretive and critical methodologies to the explication of management accounting practices within organisations. A final section will introduce Latour's sociology of translation and review the interpretation of his concepts within the accounting literature to date.

2.2 The Call for Greater Diversity in Accounting Research

There has been considerable debate since the early eighties, over the pre-eminent position of accounting research based on empiricist, positive, classical economic or management theories. Much of the research is argued to be inappropriate to an essentially social activity. Research from the traditional paradigm is typically criticised for the 'taken for granted' nature of its underlying assumptions. These assumptions regarding the behaviour of organisational

members are clearly simplistic.

Bounded rationality and responsibility were the distinctive attributes of the individuals that were to inhabit the "democratic" corporation. The leadership role of executives was to supervise and direct the activities of individuals endowed with such capacities." (Miller and O'Leary, p.493).

Many writers have argued strongly and convincingly for the relevance of an epistemology and ontology based on the social construction of reality and critical theory. Among these are Tomkins and Groves (1983), Hopper and Powell (1985). Some of these writings draw insight from Burrell and Morgan (1979), Morgan and Smircich (1980) and Morgan (1984). Morgan and colleagues provide a typology (see Figure 2.1) of epistemologies which has been widely accepted by accounting researchers, though not without some criticism (for example, see Hopper & Powell, 1985).

Figure 2.1: Broad Methodological Categories

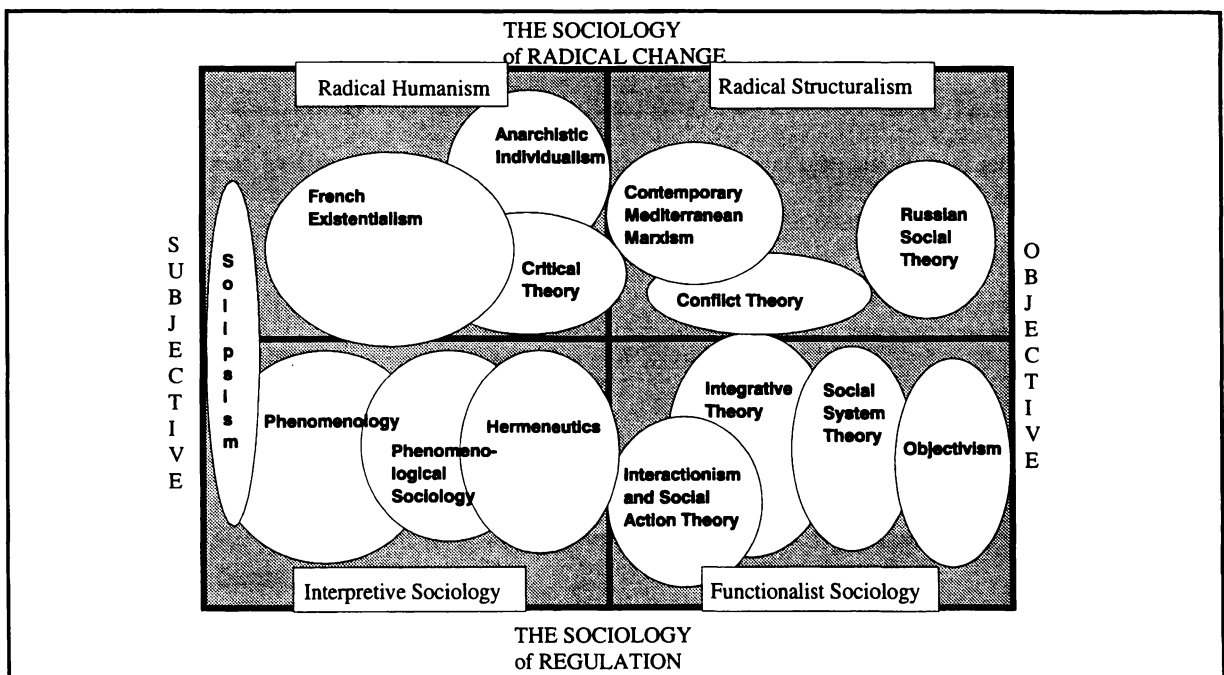


Figure 2.1 can be seen as providing at once a classificatory scheme but also a justification for quite distinct and different methodologies in the research of organisations. Both Hopper and Powell (1985) and Willmott (1993) have, while paying tribute to the contribution of Burrell and Morgan, criticised the matrix structure for strengthening an unreasonable set of restrictions on the interpretive and critical researcher. Their principal concern is with the portrayal of the subjective and objective dimensions as a dualism. Interpretations of Burrell and Morgan differ even after nearly two decades, but there appears a degree of agreement on

both the nature of their contribution to research in organisations and this issue of the dualism of the subjective and objective epistemology basis of sociological research. Many writers do not accept that this hard division of research approach into either subjective interpretation or objective evidencing is predetermined. Hermeneutics has been used to illustrate a research methodology which goes beyond the subjective (Boland, 1989; Morgan, 1988; Bauman, 1978, Thompson, 1981; Llewellyn, 1993, Willmott, 1993).

2.3 Accounting within Organisations

The summits of the various kinds of business are, like the tops of mountains, much more alike than the parts below—the bare principles are much the same; it is only the rich variegated details of the lower strata that so contrast with one another. (Walter Bagehot, as quoted in Jay, 1967, p.2)

Ways of thinking about accounting have changed. Management accounting, in particular, has escaped from being encompassed by a set of calculative procedures. It is now accepted that accounting has organizational and social significance simultaneously reflecting and shaping both structure and behaviour within organisations. As a result there has been increasing research interest in the meaning and roles attributed to accounting and processual change involving accounting in organisations. This has led to an increased interest in methodology.

Boland and Pondy (1983) provide the following guidelines for researchers of "accounting in organisations":

1/ The research must *focus on action in organisational settings*. The objective is not to study accounting per se, but to study individuals acting in organisations as they make and interpret accounts.

2/ The *research must use case analysis of specific situations* in which individuals experience accounting systems while solving organisational problems. Accounting comes into existence in use, and is not done exclusively by accountants. Accordingly, the perspectives of interest are those of the individual actors. The attempt is to understand accounting as a lived experience.

3/ The *research must be interpretive* and recognise the symbolic use of accounting in ordering and giving meaning to the individual's experience.

4/ The researcher must step out of the actor's frame of reference and take a critical view of the actor's definition of the situation, in the sense that *the actor's purely subjective interpretation must be transcended*.

source: Boland and Pondy (1983, p.226), emphasis added

Boland and Pondy (1983) provide a valuable summary of the movement within the accounting literature, and particularly the management accounting literature toward qualitative research within organisational settings.

Initially changes took the form of calls for an increased attention for empirical research and less normative theorizing (Tomkins and Groves, 1983; Kaplan, 1986; Scapens, 1990). Kaplan called for a science of management accounting to be built upon empirical research using the tools of observation, classification and measurement. But this empirical work remained implicitly positivist. Its aim was the faithful representation of practice in order that systems could be designed to enhance the 'relevance' of accounting to modern organizations (Johnson and Kaplan, 1987, Johnson, 1992). These writers certainly embraced the "focus on action in organisational settings", but others were left to argue the case of interpretive research. Hopwood described the aim of such researchers:

... to understand the meanings which are given to accounting in particular settings... order is as much constructed as it is revealed by accounting means. (Hopwood, 1983, p. 288, p. 294).

Interpretive research revealed a new understanding of the meanings and roles attributed to accounting (Burchell et al., 1980; Hopwood, 1983; Meyer, 1986; Lavoie, 1987; Richardson, 1987; Ansari and Euske, 1987; Miller and O'Leary, 1990). Hines described the emerging interpretive research as, "the sociopolitical paradigm" (Hines, 1989). These writers addressed Boland and Pondy's plea that "research must be interpretive" in order that it might "recognise the symbolic use of accounting in ordering and giving meaning to the individual's experience."

In order to mobilise accounting research within organisations Boland and Pondy also called for the "use [of] case analysis of specific situations". Research using the case study approach informed by a variety of methodologies became an increasingly prominent feature of the accounting literature in the late 1980s and is now an established stream of research.

Case study and field research (see for instance Kaplan, 1984, 1986) were terms which became more commonly used within the accounting literature during the eighties, though not all authors might concur on their interpretation of the terminology. A number of writers have sought to contribute to issues of the definition of what type of research legitimately falls within the terminology of case or field research (Ferreira and Merchant, 1992). Others have sought to analyse the contribution of case research theoretically (Humphrey and Scapens 1996;

Scapens, 1990; Scapens, 1992; Llewellyn, 1992; Llewellyn, 1993) and others more descriptively (Ferreira and Merchant, 1992; Spicer, 1992).

In order to consider how case research might contribute to the accounting literature we can examine research involving budgetary control systems, to discern 'undesirable' behaviour. This will involve the examination of organisational settings to identify different types of behaviour which might then produce cases describing the manipulation of financial data or 'gaming' invoked by the control system. An objective of such research could be to establish common features of the instances of these types of behaviour in order to enable researchers to add to the theory which seeks to describe the effects of such control systems within organisations. Covaleski and Dirsmith, together with a number of others, have engaged in a number of field studies which have sought to explain the behaviour of participants in a variety of settings involving budgetary and financial controls (Dirsmith and Covaleski, 1983; Covaleski *et al.*, 1987, 1989; Covaleski and Dirsmith, 1983, 1984). In one study involving budgeting in a hospital the adoption of budgets by controlees' as an advocacy device for their area of responsibility is described. Another study of a hospital provided evidence which helped explain and clarify the:

...degree to which [financial information] was mis-specified, delayed, suppressed and overloaded. (Covaleski and Dirsmith, 1986)

It can be concluded from an examination of the case research literature in management accounting that much can be gained in understanding of the processes of change within organisations and organisational groups from such detailed studies. It should be noted however that the methodological approaches which have been applied in this type of research are extremely diverse. Consequently it is inappropriate to view case research in accounting as a closely related research literature. The use of case research informed by Latour's (1987a) stream within social studies of science as applied in this thesis is most closely allied to the social constructionist approaches of writers such as Ansari and Bell (1991), Dent (1987, 1991), Lawrence et al (1994).

2.4 Accounting in the Public Sector

A rich literature has developed in the organisational and accounting literature in recent times, especially since the early eighties. A significant proportion of this research has adopted case research approaches. This growth has coincided with a period of substantial managerial and accounting change within the public sector. Though accounting systems change is only one feature of cultural change within the public sector, many commentators regard the accounting influence as significant (Chua and Degeling, 1993; Chua, 1995; Covalleski and Dirsmith, 1990). The incidence of accounting information systems is increasingly common in public sector organisational environments.

The effects of accounting change are increasingly the subject of research in the organisational and accounting literature (Ansari and Bell, 1991; Meyer & Rowan, 1977; Pfeffer & Salancik, 1978; DiMaggio & Powell, 1983; Scott, 1987; Zucker, 1988a and b). Research evidence is mixed. In some organizations accounting is centrally involved in work rituals: financial achievement is central to the notion of success. In others, accounting exists as a practice, but without, it seems a particularly strong significance (Goold & Campbell, 1987; Miles & Snow, 1978).

Accounting offers representations, highly stylized views, of the world. In the process of this representing, differing frames of reference or of "reality" are employed which render some aspects of events important and others unimportant (Hedberg & Jonsson, 1978). The hospital is an interesting site in this respect since the advent, and implementation, of the managerial technology is relatively new and is challenging a well and long established alternative. The role of accounting systems in the organisation appears to be, in part, the supporting of a rationalist management ethic. Particular assumptions about organization, rationality, authority and time are embodied within accounting. These concepts may suit some groups' objectives and cultures better than others (Markus & Pfeffer, 1983). The use of accounting technology to provide impetus to the adoption of a profit mentality and support a "concern for costs" ethic are widely documented in the Public Sector changes of recent times (Laughlin and Broadbent, 1991; Laughlin, 1992; Laughlin et al, 1994a and 1994b; Chua and Preston, 1994; Lawrence et al, 1994).

The emergent nature of organisation culture and the coalescing of related though often separate

developments to produce a significant change of environment are a feature of recent changes in the public sector. Dent describes developments in a large UK public sector organisation in the early 80s in the following terms:

During the course of the study, a new culture emerged. The previously dominant orientation was displaced by a new preoccupation with economic and accounting concerns. New accounts were crafted. Gradually, through action and interaction, they were coupled to organisational activities to reconstitute interpretations of organizational endeavour. Accounting actively shaped the dominant meanings given to organizational life, ultimately obtaining a remarkable significance in the senior management culture. New set of symbols, rituals and language emerged to celebrate an economic rationale for organized activity. (Dent, 1991, p. 708)

In Dent's study it is argued that changes in the organisation developed organically around the system changes which were introduced to increase economic efficiency and the profit motive into the organisation. Particular emphasis is placed on the effects of the interventions of a "new breed of Business Managers" who had been brought in to provide impetus to a "market" view of the organisation. Dent suggests that this "emergence" of an economic perspective can largely be traced to the efforts and influence of this group of managers within the organisation. Introduction of a "purchaser/provider" split at a national level has affected regional hospitals like Health Waikato. The hospital has also seen management restructuring and the introduction of managers from the private sector.

The adoption or infiltration of market philosophies into the Health Service is clearly marked in developments over the last decade (for a review of such developments from an international perspective see Chua and Preston, 1994; Arnold et al, 1994; Lawrence et al, 1994; Laughlin et al, 1994; Oakes et al, 1994).

In North America private insurers have developed DRG based prospective payment frameworks that categorize patients into distinct classes according to the nature and intensity of the services (or "products") they receive (Fetter et al., 1991). The UK has seen the "fabrication" of a market in the Health sector which has seen the institution of procedures aimed at creating "providers" (primarily hospitals) as distinct from "purchaser's" (comprising District Health Authorities and fund holding General Practitioner's) (see for example, Bradlow and Coulter, 1993; Coulter, 1995; Carroll et al, 1994; Hunter, 1992; Llewelyn and Grant, 1996). New Zealand has seen changes instituted which are very similar to the model adopted in the U.K. Some commentators on health policy see such changes as moves toward the US system of a much greater reliance on private insurance and treatment (Blank, 1994).

The next two sections review significant themes within the accounting literature, which have been applied to interpretive, case oriented research in the public sector generally and the health sector in particular.

2.4.1 Accounting as Image or as "Reality"

It has been argued that many aspects of an organization's formal structure, policies and procedures serve to demonstrate a conformity with the expectations of external constituents. Researchers have depicted formal organization structures as reliant on institutional rules which serve as myth and ceremony (Meyer and Rowan, 1977, Meyer and Scott, 1983, Brunsson, 1990, DiMaggio & Powell, 1983 and Scott and Meyer, 1994). These writers describe the use of formal systems of management and accounting practices as being centrally engaged in providing legitimacy to the organization's activities.

...accounting structures are myths ... [which] describe the organisation as bounded and unified, as rational in technology, as well-controlled and as attaining clear purposes. The myths are important:...they legitimate the organisation with the controlling external environment..(Meyer, 1983, p. 235)

The adoption of externally legitimated formal structures (such as casemix accounting systems or Diagnostic Related Group patient classification systems) may serve to increase the commitment of both internal participants and external constituents to the organisation. The organization may be protected, to a degree, from having its conduct questioned. Meyer and Rowan (1977) describe the relationship of organizations and their institutional environments as elements crucial to the success and survival of the organization. In the extreme such behaviour within organisations might be interpreted as 'sagacious conformity' (Meyer and Rowan, 1977, p. 352). Organizations such as hospitals, universities and schools might be seen to reflect the institutional environment in their structures, functions and procedures in line with changes in government initiatives almost as a matter of course. External constituents and controlling or funding authorities may be complicit in using such ceremony and myth of function and procedure as legitimating devices to continue their support for the organization.

A number of recent studies (Berry *et al*, 1985; Ansari & Euske, 1987; Covalleski & Dirsmith, 1988a and b) have cast accounting as symbolic of rationality, purposefully oriented to presenting to groups outside the adoption of managerial and economic techniques which might

be looked favourably upon. Meyer & Rowan (1977) present accounting as a screen, useful for maintaining or presenting an image, but not of real relevance to the operations of the organisation.

... organizations depend on a flow of resource for survival; society has beliefs in the efficacy of "rational" management practices; organizations which adopt such practices are more likely to be rewarded. (Dent, 1991, p. 707)

Though Dent recognises here a motivation for the choice or implementation of management practices and information systems in order to present the organisation to outside parties to maximum advantage, he goes on to consider the implications for internal culture change. Other writers too have preferred to stress the implications for internal relations and culture of the implementation of accounting systems. This related, though alternative view seeks to express the notion that the impact of the adoption of accounting technology may have as a powerful constitutive and constructive role in organizational life (Hines, 1989; Miller and O'Leary, 1987).

In the health sector it seems reasonable to suggest that case-mix accounting systems may be expected to play a role in providing accounts of activities in terms that make them acceptable to interested external parties (Scott and Black, 1986; Scott, 1987; Scott and Meyer, 1983). A problem which such an imaging process may produce is the resulting credibility gap caused by the relatively simple nature of these ritualised portrayals and the complexity of the procedures required to make the activities of the organisation operable to its members. Meyer and Rowan (1977) and Meyer (1983) have proposed a solution to these disjunctures in the form of a "decoupling" of internal technologies from external image systems.

... to maintain ceremonial conformity, organizations that reflect institutional rules tend to buffer their formal structures from the uncertainties of technical activities by becoming loosely coupled, building gaps between their formal structures and actual work activities. (Meyer and Rowan, 1977, p. 341).

Covaleski and Dirsmith suggest a similar view of control systems as a device to enable the "decoupling" of the internal operations of the organisation from its external public image.

Hence formalized control may be seen as decoupled from backstage operating processes. (Covaleski et al, 1993, p 67)

(For further discussion see: Hall, 1972; Freidson 1986; Raelin 1986). Meyer and Rowan (1977) present a picture of techniques such as accounting as implicated in organizational life

in the following ways:

- 1/ As impersonal rules, expressed in technical terms, aimed at the rational pursuit of social purposes.
- 2/ The techniques become institutionalized to the point where members of the organization take the rules and procedures for granted (as legitimations).

The impact of rule based behaviour is described in the following quote.

Technologies are institutionalised and become myths binding on organizations. Technical procedures of production, accounting, personnel selection, or data processing become taken-for-granted means to accomplish organisational ends. Quite apart from their possible efficiency, such institutionalised techniques establish an organisation as appropriate, rational and modern. Their use displays responsibility and avoids claims of negligence (Meyer and Rowan, 1977, p.344).

Clearly accounting is only one such device available to modern organizations. The role of accounting in the organization rests on the nature of the organization itself. Organizations, which have a complex of objectives to achieve with unclear or conflicting outputs and outcomes, may draw on accounting, as myth and ceremony, to maintain legitimacy and an appearance of rationality while avoiding invasive internal controls. Health care organisations are faced with an environment where outputs are difficult to define and appraise and decisions are often informed by 'ambiguous technologies' (as in the clinical freedom over the variety of medical treatments for similar complaints, illnesses). Output measurement is a well known problem in health care (Bourn and Ezzamel 1986). Because of difficulties in measurement, incomplete measures may be substituted, for example mortality in place of morbidity.

Policy-makers and clinicians have recently drawn on economic constructs, such as quality-adjusted-life years (QALYs) as a mechanism for making trade-offs in decisions over the treatment of different patients. But such judgements are still subjective because of differences in opinion as to the likely quality of life in different health states; the relationship of changes in life expectancy to the value attached to such changes; inherent risk characteristics of the population are likely to differ, in terms of risk-adverse, or risk-neutral (Loomes and McKenzie, 1990). While it might be argued that in a market environment efficiency may determine success, public health providers may be unable to resolve uncertainties on the basis of efficiency alone.

Accounting rules and procedures may be seen as inappropriate to the efficient functioning of such organizations in such ambiguous environments. The use of rule-based procedures, such as accounting, may produce inconsistencies and inefficiencies in such organizations, as members of the organisation struggle with conflicting objectives.

An alternative is to decouple the evaluation of technical procedures (in this case the direct provision of medical care) from formal structures and institutional rules. Thus, these organizations may actively encourage professional autonomy, have ambiguous goals and render data on technical performance invisible..., free from rules (such as accounting) which assume the status of myth or ceremony. In this way, decoupling acts as a 'buffer' in which organizations permit technical procedures to be removed from formal, standardized, legitimizing rules and structures. (Lapsley, 1994, p.340)

Other authors have recognized this decoupling as problematic. In contrast to the accepted practice in industrialized countries to institutionalize professional expertise in people, Abbot (1988, p.323-325) found a growing trend to institutionalize expertise in organizations. In the professions there appeared to be a strong tendency for professional knowledge to reside within the structure of the organization itself. In this case decision autonomy may rest, in part at least, not with the individual practitioners but within the structure of professional rules and regulations which constrain their roles. In this manner one might see, within the health sector and hospitals in particular, the use of International Classification of Disease Codes (ICD. 9), Diagnostic Related Groups (DRGs), and related case-mix accounting systems as a form of organizational structure through which management control is effected. To some extent then we might regard this as a threat to the existing professionals in the sector, nurses and perhaps particularly clinicians, whose expertise and knowledge is, in part, "taken in" to the casemix system. In this sense the practice of formal control may result in a re-coupling of backstage operating processes and formal systems, as the casemix system invades the work practices of the health professionals¹.

The use of DRGs by hospitals may also be seen as a technological solution to the problem of obtaining scarce resources. This perspective views the implementation of DRG based casemix systems as instrumentally rational (Hackman, 1985; Perrow, 1985). An alternative perspective would be to view the process as part of the response to political changes, as a means of political advocacy (Boland and Pondy, 1983; Covalski and Dirsmith, 1988b), to promote the case of the organisation. In either case the coding system could be implemented and used primarily or exclusively to provide information to satisfy or influence external parties.

2.4.2 Casemix Accounting: Rationality and Efficiency or Surveillance and Control

Accounting is frequently depicted in the conventional literature as an impartial technology, faithfully representing the economic reality of the organization (e.g. Ijiri, 1965; Horngren 1977; Cooper and Kaplan 1991; Chandler et al, 1991). The purpose of accounting is portrayed in this manner by orthodox theory as a functional system whose aim is to facilitate rational decision making by organisation members, in the interests of economic efficiency. Similar images are described in the accountings which have become increasingly used within the health sector.

Case-mix accounting systems have been advanced as both reflecting the economic reality that underlies a hospital's various "product lines",, and facilitating rational decision making regarding resource acquisition, deployment and use. (Covaleski et al, 1993, p.65)

In the health-care sector, the application of case-mix accounting systems, their associated costing and budget procedures is consistent with this perspective. Such systems have been widely advanced to help hospitals control costs and encourage planning (Cook et al., 1983, 1985; Fetter et al, 1980; Fetter, A. et al, 1991; Thompson et al, 1979; Young and Saltman, 1983; Smith and Mick, 1985).

Management may regard such systems as of value not only to "manage" better (in terms of economic efficiency) their various "product lines" but also as a counter to shield their organisation from the impact of market based reforms (in the form of reduced funding). The accounting systems may provide an image of rationality which enables the organisation to avoid the extremes of funding cuts, in part by providing a clear justification for expenditure.

Mainstream literature tends to portray case-mix accounting system in a rationalist functional role. Accountability and measures of production efficiency can be provided by the system to hospital administrators facilitating a rigorous form of budgetary control and comparisons among departments and physicians. Such prescriptions hold out the prospect of establishing and documenting a relationship between medical and administrative decisions (Thompson et al, 1979; Fetter et al, 1980; Fetter, A. et al, 1991). This rationalising of health services has been stated succinctly by Eastaugh (1987). He has suggested the use of DRGs and the resultant case-mix accounting information by hospitals to increase profitability by offering only those products that promise a certain level of net income. Patients who cannot be profitably served by any given hospital or clinician should be referred elsewhere for treatment

(Fetter and Freeman, 1986; Eastaugh, 1987).

Other specific advances in managerial control and increased efficiencies are widely claimed. Case-mix accounting systems should facilitate a number of management philosophies or techniques. Improved patient treatment scheduling; the delegation of more budgetary and accounting activities to departmental managers thus increasing budgetary participation; improved work scheduling among available staff; and the formation of physician cost-control committees (Cook et al., 1983, 1985; Young and Saltman, 1983; Smith and Mick, 1985). Many of these changes are envisaged at Health Waikato, most are already in place though there is as yet no clear indication of benefits. In addition the impetus to undertake the development of clinical protocols, given the improved ability to monitor casemix data against these is also a priority in some specialisms. Clinicians in a number of specialist areas are already making use of casemix data to enable them to refine existing protocols or plan new treatment regimens.

A critical perspective would take a rather more pessimistic view of the use casemix systems. Targeting health services has led to a reduced access to health services for less well off people and the closure of smaller and rural hospitals in the US and Australia (Smith and Dillard, 1994; Sapolsky, 1987). The enabling of greater efficiency has consequences for these categories of people who are consequently denied health services or disadvantaged by their remoteness from the health providers. Indeed the adoption of the Casemix technology may be seen from a number of clearly differing perspectives. Chua and Degeling (1993) talk of the "manufacturing" by the Yale researchers (see Fetter et al, 1980) of the DRGs from a disease classification published as a medical reference some years earlier .

In constructing the group of 470 DRGs, the Yale team was guided by two related principles --"medical interpret ability" and "homogeneity of resource use". They sought a classification in which each of the DRGs had to represent a collection of diagnoses and related symptoms which could be expected to evoke similar clinical responses and regimes of treatment from clinicians and in so doing, initiate similar patterns of resource consumption. That is, a DRG was to represent the bundle of goods and services that a clinician delivers to a patient in order to deal with a particular kind of illness. (Chua and Degeling, 1993, p. 307/8)

The following is a much more substantial indication of the authors view of the use of DRG systems in implementing a Casemix technology. We are left in little doubt as to the seriousness of the charge against the use of this type of controlling technology.

From medicine, the DRG classification system borrows the detachment of the sick, physical body from the self (the Cartesian distinction between the mind and the body) and its decomposition, both conceptually and materially, into component organ systems. Through this anatomico-clinical atlas (Foucault, 1973) of the body, the concept of life is emptied of its metaphysical content and distributed round a collection of related physiological and biochemical processes. From economics, the DRG system takes an objectified image of the patient body as part productive subject (of illness) and part consumptive object (of goods and services ordered by clinicians). This continual form of objectification of sick bodies perpetuates their susceptibility to being known and acted upon by experts who claim to represent the patient. (Chua and Degeling, 1993, p. 308)

It may thus be argued that administrators focus on formulating "artificially limited, consistent and formalized" procedures and rules, like casemix, that control the manner in which the professional work is performed. In essence it is by this means that administrators are to "control" through "surveillance". (Freidson, 1986; Chua and Degeling, 1989)

... case-mix accounting may be used as a political device, this time for transforming the DRG framework and case-mix accounting systems into a specific, organisationally directed surveillance practice for legitimating the allocation decisions made by administrators and, in so doing, influencing those allocations. (Chua and Degeling, 1993, p. 307)

There are different views on the effectiveness of such control devices. Successful control assumes that the work can be adequately described within the reporting system and that the workers are unable, or unwilling to appropriate the system to suit their own ends².

Clegg (1989a, b) observed that the application of power need not be countered by overt resistance to power and need not involve overt conflict. There is a general tendency among those subject to power and control, to resist by means of circumventing or diverting to their own ends the systems and rules imposed rather than by directly confronting them. Such terms as "transforming" "circumventing" or "diverting" are all reflective of this view of resistance to control and disciplinary practice. Ultimately, though this could be a lengthy process, the relative power of those exercising versus those responding to disciplinary practices is likely to affect the outcome

2.5 Following the Actors Around

In borrowing from Latour, and interpreting accounting and clinical budgeting as technology the images of commodification and control, power and resistance will be replaced in the

theorising in this thesis by such constructs as inscription, acting at a distance, centres of calculation and networks of allies. This approach will be taken in the realisation that any perspective is partial (Bauman, 1978; Boland, 1989; Morgan, 1986; Ricoeur, 1974). The use of Latour's theories presents a particular opportunity to apply a theoretical framework which is intuitively of great appeal. Latour's framework has now been used by several accounting researchers (Robson, 1991, 1992; Preston *et al*, 1992; Bloomfield *et al*, 1992; Chua and Degeling, 1993; Chua, 1995). This research is concerned to follow 'the preparers of accounts in action' (Chua, 1995, p.114) in a manner which would reflect the approaches used by some sociologies of the history of science (see Latour, 1987a and 1988a,b and c; Knorr, 1981; Latour and Woolgar, 1979; Gilbert and Mulkay, 1984).

The ideas which constitute the Sociology of translation have been shown to be of great value in adding to our appreciation of the history of science and the development of technologies. The particular attraction to this researcher concerns the emphasis which Latour and colleagues place on the nature of the social milieu. The framework of theories provided by Latour encourages the researcher to give emphasis to both humans and objects in order to understand how "facts" have come to be settled as they are. In taking such views into this research it is hoped to provide insight into both the detail of accounting as it is practised within organisations and the manner in which human actors and objects of technology may combine to provide much stronger forces, networks within organisations.

Latour argues that in order to understand the development of science and technology, and its social implications, we must 'follow scientists around' and seek to examine and explain their behaviour in the process through which technologies are developed and become an accepted part of society. In relating this to accounting, Preston *et al* (1992) have emphasised the relevance of studying the organisational consequences of the implementation of accounting information systems. If we are to more fully understand accounting it is of import that we 'follow accountants around' [more generally to follow the organisational actors around] and examine the processes through which accounting is actioned. Borrowing from Latour it is only by seeking to explore the processes which occur in the construction of 'facts' that we may develop an adequate appreciation of the influence on organisational practices of accounting. Only by seeking an understanding of the processes through which accounting systems are actioned, implemented and accepted, within the organisation can explanations of the significance, or otherwise, of accounting for organisational members be obtained.

The concept which underlies this interpretation of social action views social relations and accounting technology as being jointly construed out of the implementation process. These processes which surround the implementation of accounting systems are both dependent on and constitutive of the organisation which emerges from the implementation process. Though accounting technology brings with it certain legitimacy, the effect or 'success' of an implementation in any particular circumstance is a complex interrelation of many contingencies.

Implementation may be interpreted differently, either narrowly from a conventional rational perspective, or more broadly as one factor in a social milieu. The understanding sought here is not that of the formal implementation procedures but a deeper appreciation of the formal and informal processes which effect not only the character of the implementation process but also influence the form which the system takes as it is constructed and interpreted by the actors within the organisation. In the research which is described in this thesis, systems change might be described as involving multiple implementations of different but related pieces of accounting and other information systems.

A broader interpretation might hold that the issues which are examined here are no less relevant in seeking to understand the effects of what might appear to be more established examples of accounting in organisations. This follows from the argument that, seemingly stable, post implementation situations can be regarded as being merely the outcome of 'the resolution of earlier controversy' (Latour, 1987, p.46). The benefit of being able to study an accounting implementation is that it is likely to be much easier to establish the manner in which the translation process is effected. Latour argues that once facts are established, and in our terms the accountings are accepted (viewed in one way or another) by organisational members then the process becomes much more difficult to uncover. The machinations of the implementation are glossed over and the system is portrayed as is. If we want to be able, more fully, to understand the processes which have given rise to the system as it has come to be seen it is critical to follow in detail the networks and relationships which were a necessary part of its construction. The research provides an opportunity to seek an in depth understanding of a complex and intricate accounting in action, drawing from Callon and Latour's sociology of translation in order to provide a framework for theorisation.

2.6 Why Do I Want to Follow the Actors

I am concerned at this point to explain what my theoretical suppositions are in an appropriate manner but without compromising, unduly, my own objectives, interpretive framework and beliefs. The theoretic perspective underlying my theoretical suppositions are broadly those of Latour and Callon. My adoption of a Latourian frame of reference has been as a result of self selection and not in any way a matter of convenience. I have found reading Latour especially enlightening but also quite a challenge. But my decision to stay so particularly within his theoretic frame is motivated by a strong appeal.

My interpretations of Latour are strongly influenced by my own beliefs and prior understandings. In this respect I find Latour influential because I believe that he encapsulates a view of the world within a disparate set of constructs which seem to me to mirror my own perceptions. On the other hand I am increasingly aware of the controversial nature of Latour's underlying philosophy. This has not deterred me. Though in many ways it is "easy" (or perhaps more acceptable) to select parts of Latour's writings and reject others (Bloomfield, 1992; Bloomfield and Best, 1992; Chua, 1995; Preston et al, 1992; Ezzamel, 1994), I have deliberately avoided this. My feeling is that this is a more adventurous and theoretically stronger approach than taking selections from Latour and mixing and matching them with other writers. I do not say there is not place for synthesising the contribution of earlier texts. That would be nonsense. But in relation to Latour this is, in my consideration, a dangerous path. This is so because it is not clear that Latour's contribution to the sociology of knowledge has been effectively characterised. Consequently my approach is to try and interpret and apply Latour's constructs as faithfully as I am able. This of course is a problem, since I do not claim to be a Latour and he has not provided a neat and tidy explanation of how to apply his ideas within accounting. Some writers would contest that he has not provided a neat and tidy explanation of anything (Amsterdamska, 1990; Collins and Yearley, 1992a and b).

2.6 Conclusion

Discussion in this chapter has sought to show that accounting may be seen as a constitutive social construction implicated in the maintenance of, and emergent from, complex social structures (Lehman and Tinker, 1987; Hines, 1989; Hopper and Armstrong, 1991; Hopwood

1987; Miller and O'Leary, 1987; Nahapiet, 1988; Covaleski and Dirsmith, 1988a; Bhimani, 1993). Others have sought to highlight the rhetorical dimensions of accounting (Arrington and Schweiker, 1992). There have been moves in the literature to expand the focus to examine the role of accounting numbers in the exercise of governmentality (Miller and Rose, 1990; Rose and Miller, 1992) and indeed how this relates to the emergence of a 'new economic citizenship' (Miller and O'Leary, 1993, 1994). These latter issues will be addressed in this thesis more fully in chapters 5 and 6.

Chua (1995) argues that:

... despite this extensive body of work, there are relatively few detailed "micro" ethnographies of the making up of accounting numbers in organisational settings. (Chua, 1995, p.114)

The literature which does provide some contribution to the construction of accounting numbers in organisational settings includes Berry *et al.*, 1985; Ansari and Euske, 1987; Bloomfield; 1991.

The next two chapters will explicate the methodology and method used within this thesis. Latour's (1987a) Rule's and of Method and Principles will be introduced in chapter 4 and the Rules discussed, in relation to their impact on my research method. Chapters 3 and 4 are very much oriented to the central methodological concerns of my thesis which seeks to explicate what some of the implications are for accounting research of adopting a Latorian view of accounting systems as technological objects.

1. The manner in which professional groups of people in organizations are differentiated by hierarchical position and how these institutional positions influence the work of creating, communicating and applying expert knowledge has been examined by other writers (Freidson, 1986). Freidson argues that power group interests and decoupling are influenced by the different functions the groups perform within the organization. In professional bureaucracies, such as hospitals considerable differentiation also exists between the practitioners and administrative components of the organization. These clearly felt lines of differentiation are certainly evident in Health Waikato. Perhaps the most long established is the division between nurses and clinicians, and particularly nurse managers and clinicians. From our perspective, the more recent introduction of professional managers, often with little or no Health Sector experience provides a new and interesting decoupling within the organization.

Freidson argues that professionals, though lacking control over policy making and resource allocation, may exercise power in other ways. In Health Waikato, we might see this as currently an area of contest. The clinicians, in particular, are central to the DRG system since they must either code patients themselves or approve some other authority to do so. This gives them great potential power since it is presently from the DRG system that contracting and thence funding decisions from the RHA will be made.

2. Existing Clinical coding systems are very complex, consisting of many hundreds of coding groups and thousands of individual codes. But there is still reason to doubt that the performance of work can be wholly commodified within the ICD.9, and DRG systems in New Zealand. In any event it may be that, health professionals, in applying their judgment and the day-to-day exigencies of specific work, transform the rules and policies toward their own concept of the (health) service. "The formal procedures administrators prescribe are applied inconsistently and informally by the practitioners (Freidson, 1986, p 226-227) and a decoupling consequently takes place in the transformation of formal knowledge communicated by administrators in the form of procedures and substantive rules to practitioners." (Covaleski and Dirsmith 1993, p 68)

Chapter 3: Mobilising Latour's Methodology

3.1 Introduction

This chapter seeks to provide an explanation of the philosophical concepts which underlie the research. The next section will introduce the sociology of translation. The links to a Machiavellian framework within the theories of Callon and Latour are then considered followed by some more philosophical discussion of Latour's theoretical position. The Machiavellian link is recognised by Callon and Latour (Callon et al, 1986) as providing a significant explanation of the philosophy behind the methods they have developed in their empirical studies of science.

There is no thinkable social life without the participation - in all the meanings of the word - of nonhumans, especially machines and artifacts... our point is that the activity of dismissing them, is as difficult, as contentious, and as revealing as the attribution of meaning, will and intentionality to humans. (Callon and Latour, 1992, p.360)

My interpretation and understandings of the implementation of casemix systems at HW are guided by the above conception of the significance of machines, of technological objects. It is a major objective of my research to explain that technological objects, introduced into the health system and hospital (including the medical coding systems and accounting techniques adopted) represent powerful "black boxes" which gave much of the strength to the spread of the casemix system and health reforms more generally. These technologies contributed to the spread of ideas and facts while resisting modification.

My aim is to describe the strength and role of such "quasi-objects" in influencing the social/culture within the organisation. This is not a functionalist view in the sense that I wish to hold up these systems as producing the "best" information and enabling "better" decisions. My focus is on the manner in which such processual developments, such as are constituted by casemix systems, insinuate themselves within organisations. Such projects necessarily include mixtures of people and machines/technologies. Though not entirely deterministic in nature the development of such networks may be heavily influenced by the introduction of black boxes. These quasi-objects typically consist of layers of objects, techniques and technologies involving more or less sophisticated translation devices, presenting any human actor with some difficulty in challenging any resulting "inscriptions".

3.2 The Sociology of Translation

A number of writers on organisational information and accounting systems have sought to apply the ideas of Latour and Callon (e.g. Callon 1986; Callon et al. 1983; Latour 1987a) to the construction of accounting systems (Bloomfield et al, 1991, Preston et al, 1992, Lawrence et al 1994 and Chua 1995). Others have applied different aspects of Latour and Callon's theorising to examine the development of the practice of accounting itself and its position of power in the sphere of managerial control (see Robson, 1991, 1992). Though Latour applied his ideas to the nature and process of science the concepts are applicable to other processes involving change and human organisation. Miller and Rose (1990) have been prominent in applying aspects of Latour's theorising to the question of state and governance.

The process of 'translation' involves the interaction among agents, which produces alliances that provide support to one set of objectives rather than another within the change process. Part of the process involves agents in the construction of interests, the enrolment of allies and the mobilisation of resources in order to achieve some preferred outcomes. Using empirical studies of science Latour describes a picture of the chance nature of scientific development, of the movement from weak hesitant possibilities to strength, with the aid of large numbers of human and non human allies. The term translation is used to label this process.

It should now be clear why I used the word *translation*. In addition to its linguistic meaning (relating versions in one language to versions in another one) it has also a geometric meaning (moving from one place to another). Translating interests means at once offering new interpretations of these interests and channelling people in different directions... The results of such renderings are a slow movement from one place to another. The main advantage of such a slow mobilisation is that particular issues (like that of the science budget or of the one-pore model) are now *solidly tied* to much larger ones (the survival of the country, the future of cars), so well tied indeed that threatening the former is tantamount to threatening the latter. Subtly woven and carefully thrown, this very fine net can be very useful at keeping groups in its meshes. (Latour, 1987a, p117)

The process of translation involves four main 'moments': problematization, 'interessement', enrolment and mobilization. Problematization refers to agents' efforts to make other agents subscribe to their own conceptions by demonstrating that they have the right solutions to, or definitions of, the others' problems. This is achieved in the course of channelling the target agency through a set of unique and well-defined practices (obligatory passage points) that are under the control of the enrolling agency. 'Interessement' involves the interference of the enrolling agency between the target agency and another agency. This initially involves the enrolling agency identifying, defining and stabilizing the identity of the other agencies, and

then developing and cementing links between itself and the target agencies. Enrolment involves the construction by agencies of alliances and coalitions between the memberships to reach agreement on the ends which they desire to pursue. Finally, mobilization refers to how the enrolling agencies control the enrolled agencies or ensure that representations of interests remain fixed. These 'moments' are not meant to be regarded as entirely distinct, nor do they imply temporal differentiation. The sociology of translation will be elaborated in chapter 7, the first of the case chapters. The process of problematisation will be considered in detail in chapters 5 and 6.

It is important, as Latour (1987a) suggests, to arrive before the technology is fixed, known and unproblematic. The object of beginning the research process at this early stage in the deployment of such a significant piece of management technology is to enable us to observe and document the process through which the system takes shape, the crucial decisions which fix one part of the technology or another. This line of theorising sees the fabrication of accounting systems as processual and to an extent unpredictable. Unintended consequences will emerge during the construction of the system, unexpected developments will serve to influence the final form that the system takes. The intention of the researcher (Preston et al, 1992) is to capture some of the developmental processes which accompany the implementation of "clinical budgeting":

... before the controversies involved in its fabrication are closed, before the complexities of its inner workings are taken for granted and before the patterns of organizational power and influence, instrumental in the formation of management budgeting, are forgotten or rationalized. (Preston et al, 1992, p.565)

Similarities to the processes which are described in the Preston et al study can be seen in this thesis. The impact of external monitoring and policy formulation by the State, the introduction of a quasi market for health services in New Zealand are in general terms of a parallel nature to those changes in the UK, not to mention Australia and a lesser extent the US. Consequently a number of the forces at work at the macro level are similar, though mediated of course by local environmental and cultural features, to those elsewhere. Health Waikato is in the process of constructing its clinical budgeting system around a central suite of software developed in the US called Transition. Thus some of the characteristics are limited by technical aspects of the software package. In acknowledging such potential limitations these should not be overemphasised since the process of implementation is subject to a range of social and political influences, which also contribute to the form the system takes. On the other hand

rather than posing a constraint on the way the system might develop, the availability of certain modules within the package, such as the ability to report performance against standard costs, may be seen to encourage the development of some styles of cost information and reporting rather than others.

As mentioned previously the policy of the New Zealand government to construct a quasi market in the Health Sector, by distancing "purchasers" from "providers" is similar to changes instituted earlier in the UK. The establishment of the purchaser, provider split also makes significant demands on the provision of information by, particularly health providers. This requirement for information is driven primarily by the need to facilitate the market mechanism by providing information which can be used in "commercial" decisions on the negotiation and awarding of contracts for the provision of health services.

Latour discusses and identifies a number of processes which he believes are central in the construction of technologies. Latour urges a careful consideration of what discursive and cultural resources actors use in the construction of technology or science. In interpreting the events and processes at Health Waikato such concepts will be shown to be fundamental to our understanding of changes within the organisation. In addition concepts such as the political, social and economic environment also have a relevance to understanding how actors explain, justify and articulate the accounting technologies which are being proposed, resisted or talked about. Consequently some broader appreciation of the environment surrounding developments at Health Waikato are also necessary to facilitate understanding. The various contexts and general debates about resourcing and administering health care in New Zealand and the development of policy toward the public sector in general is relevant to what took place, and is taking place. Such factors play a considerable role in setting the agenda and "problematizing" issues for "resolution".

3.3 Callon, Latour and Empirical Methodology

3.3.1 The Machiavellian Dimension

Once the organisation exists...it is for those who compose it to wield what power they can within it...what they get will be the result of interplay of uncontrollable external forces with the minds and wills of the men and women who as shareholders, directors, executives and employees make up the corporation. (Jay, 1967, p.212)

In seeking to locate Callon and Latour it is necessary for us to clearly distinguish the relation between power and structure. Machiavelli's approach to power may be distinguished from and compared with Hobbes' 'sovereign' concept (Clegg, 1989, p.21-38). For Machiavelli, what was most striking about power was its strategic, contingent, extensional nature, a concept of power dependent greatly on alliances, on strategies, for its practical accomplishment.

Against the fiction of *Leviathan*, which Hobbes was to engender, the analysis of power in Machiavelli conceptualized it in terms of networks, alliances, points of resistance and instability, using much the same military metaphors that Foucault (1981) was later to find congenial. (Clegg, 1989)

In addition to Foucault, Michel Callon and Bruno Latour at the Centre de Sociologie de Innovation in Paris, have systematically explored the Machiavellian dimension in the analysis of power. Machiavelli provides a framework for the ethnographic techniques of Callon et al. (1986). Callon clearly indicates a high regard for the ethnographic techniques he attributes to Machiavelli:

... a detailed and systematic description of the machinations of princes which flushes out their hidden designs [in which] he devotes himself, as a participant observer, to what would nowadays be called an ethnography of political action. Establishing his quarters in the palaces of Florence, and following the prince, Machiavelli succeeds in bringing Italian society to life and understanding its history and its conflicts. Paradoxically, in attaching himself to one person, the prince, he reconstitutes the cruel reality of a whole society. To be rigorous in such a project it is necessary to be audacious. In particular, it is vital not to let morality blind oneself in the study of how a society takes shape and is transformed from its strategic loci. (Callon et al., 1986, p.5)

These processes of investigation, description and explication have provided a framework from which the sociology of translation was developed. This concept of "following" the key actors is one which is central to Callon, Latour and their colleagues. It is the guiding principle from which they seek to uncover the network of relationships, of both human and non-human actors which are characteristic of "technoscience".

3.3.2 What is This Thing Called Technoscience?

The notion of network, in its barest topological outline, allows us already to reshuffle spatial metaphors that have rendered the study of society-nature so difficult: close and far, up and down, local and global, inside and outside. They are replaced by associations and connections (which ANT [Actor Network Theory] does not have to qualify as being either social or natural or technical). (Latour, 1997a, p.4)

This uncovering of the network of relationships which is built wherever and whenever

technology is developed or used is characteristic of these writers who produce "empirical studies of science".

ANT played with a generalized symmetry (Callon, 1986) and made a principle of using whichever words are connoted in one of the former realms to describe the others, thus showing the continuity of networks and the complete disregard for the artefactual gaps introduced by prerelativist arguments. *However this solution is rather tricky since it may combine all the misunderstandings -and this is indeed what happened to ANT, readers and users alike saying at once that it is a social constructivist argument, the return of naturalism or a typically French belief in the overall extension of texts... Which of course it is in a sense, but only in so far as ANT is the simultaneous rejection of naturalisation, socialisation and textualisation. ANT claims that these '(x)-lisations' have to be dissolved all at once and that the job is not done better if one of them gains hegemony or if the three are carefully circumscribed.* (Latour, 1997a, p.10)

Rather than providing a view of science as neutral and "disinterested" some writers have brought out how scientists have 'interests' which are implicit in scientific work (see the debates between Woolgar 1981 and Barnes 1981; see also MacKenzie 1978). Latour (1987a) and Callon (1984) share a view of the essentially social nature of science. The position taken by Callon (1986; 1980) and his colleagues (see Callon et al. 1983 and 1986; Callon and Law 1982; Callon and Latour 1981; Law and Lodge 1984) is to seek to avoid imputing interest to actors and instead emphasise the role played by:

... perspectives which seek to demonstrate how networks of interest are actually constituted and reproduced through conscious strategies and unwitting practices constructed by the actors themselves. (Clegg, 1989, p.204)

Interests appear as 'temporarily stabilized outcomes of previous processes of enrolment' (Callon and Law 1982, p.622). These outcomes may have been intentionally produced or may be the result of the "unintended consequences" of unplanned and unrehearsed actions.

Intention is not at all necessary to the model; the 'temporarily stabilized outcomes' may be practices historically encountered in their fixity and facticity which no one necessarily 'intended' in any relevant way. They may be no less real for that, and agents may come to have an interest in them for any number of reasons. Why they should do so is in itself not a necessary part of any explanation. (Clegg, 1989, p.204)

Latour and his colleagues regard all facts as temporarily stabilised, ie. they constitute the truth with a small t. Facts are themselves established through a process. This is technoscience, and the process is termed a sociology of translation. The "essence" (here Latour refers to Sartre¹) of objects and social structure are produced jointly through this process of translation. Facts are produced which are given meaning within extensive networks of interrelationships among human and non-human actors.

Latour argues that only when we understand all this;"that the networks that constitute our daily lives,... the quasi-objects of a-modernity, the mediators, only then will we have the subject of the proper science: nature, and its representatives, those who speak in its name. Societies, and those many things, those many representations, that extend capacities in its name, can all be pictured in this new science. They were always there--but, because we pretended we were modern, he suggests, we had so many ways of not seeing" (Clegg, 1995, p.157). Latour (1993) attempts to construct a meta-theory to encompass the concepts which he and others have developed within their empirical studies of science.

3.3.3 Locating Latour

From a methodological perspective it is difficult to classify Latour. Chua (1995) describes Latour as a social constructionist. Potter (1996) in writing on social studies of science identifies three streams of theorising and Latour is identified with a small group of other writers (notably Knorr-Cetina, 1981 and 1996; Latour and Woolgar, 1986). Potter traces the origins of this theorising to the major stream of phenomenological constructionist theorising attributed to Berger and Luckmann (1966). The other streams of theorising which constitute the two other identifiable groups are labelled as "theories of interests" and "empirical relativism" (Potter, 1996). Potter does note that the distinctions are not absolutely clear:

Modern sociology of scientific knowledge (or SSK, as it is widely called) is characterised by a number of overlapping theoretical concerns, analytic methods and research focuses. (Potter, 1996, p.25).

Some writers from within SSK have disagreed with aspects of Latour's theories. These include: Barnes (1981) and Shapin (1988), on the role of "interests"; Collins and Yearley (1992a and 1992b) particularly on epistemology (see also reply by Callon and Latour, 1992) and also Oldroyd (1987, 1988) and also replies by Latour (1987b, 1988c). Scott (1991) has claimed to have shown that Latour's ideas do not always work, though it is difficult to see where he demonstrates this to be the case. Indeed it seems quite possible to read Scott as being illustrative of the sociology of translation.

Latour writes a good deal of the inescapable mixing of nature and society and the role of a vast mass of intermediaries and actors, consisting of both humans and nonhumans.

Nature will emerge altered from Boyle's laboratory, and so will English society... Such metamorphoses are incomprehensible if only two beings, Nature and Society, have existed from time immemorial, or if the first remains eternal while the second alone is stirred by history. These metamorphoses become explicable, on the contrary, if we redistribute essence to all entities that make up this history. But then they stop being simple, more or less faithful, intermediaries. They become mediators - that is, actors endowed with the capacity to translate what they transport, to redefine it, and also to betray it. (Latour 1993, p.81)

It is this "symmetry" in treatment of humans and nonhumans which has caused the most severe criticisms of Latour.

The consequences of the semiotic method [of Latour] amount to a backward step, leading us to embrace once more the very priority of technological, rule-bound description, adopted from scientists and technologists, that we once learned to ignore. (Collins and Yearley, 1992, p.377)

Callon and Latour (1992) accept this statement as "not a misreading of our position". They go on to suggest that the view is "a necessity of C&Y's (Collins and Yearley) cold war waged against realists. Our position is for them unjustifiable since it helps the traditional and conventional technologists and scientists to win the day over SSK's discoveries." (Callon and Latour, 1992, p.347)

Further on the same page Callon and Latour (1992) make the following claim

that in C&Y's frame of reference [and for that matter in the whole Anglo-American tradition of science studies] ... they [C&Y] cannot imagine any other yardstick for evaluating empirical studies than [their own], and they cannot entertain even for a moment another ontological status for society and for things. All the shifts in vocabulary like 'actant' instead of "actor," "actor network" instead of "social relations," "translation" instead of "interaction," "negotiation" instead of "discovery," "immutable mobiles" and "inscriptions" instead of "reproof" and "data," "delegation" instead of "social roles," are derided because they are hybrid terms that blur the distinction between the really social and human-centred terms and the really natural and object-centered repertoires.

Latour has made similar statements in other books and articles but no more clearly than with Callon above and in "We have never been modern" (Latour, 1993).

Are you not fed up at finding yourselves forever locked into language alone, or imprisoned in social representations alone, as so many social scientists would like you to be? We want to gain access to things themselves, not only to their phenomena. The real is not remote; rather, it is accessible in all the objects mobilised throughout the world. Doesn't external reality abound right here among us? (Latour 1993, p.90)

Latour concludes "We Have Never Been Modern" in the following manner

In the course of this essay, I have simply reestablished symmetry between the two branches of government, that of things - called science and technology - and that of human beings. (Latour 1993, p.138)

Amsterdamska (1991) in her review of Latour's earlier book "Science in Action" states that "Latour's entire book could be considered [an] elaboration" of the principle that "the fate of facts is in later user's hands". In precisely the same manner "We Have Never Been Modern" is entirely an elaboration of the principle of a symmetrical treatment of human and non human actants.

... **the networks** are as we have described them, and they do cross the borders of the great fiefdoms of criticism: they **are neither objective or social, nor are they effects of discourse, even though they are real, and collective and discursive...the scientific facts are indeed constructed, but they cannot be reduced to the social dimension because this dimension is populated by objects mobilised to construct it.** (Latour 1993, p.6)

Others writing within ANT have supported this claim (Callon and Law, 1995, 1998) and from outside of ANT (Hacking, 1992, Pickering, 1990, 1992). Hacking comments:

Unlike those authors, [Collins and Yearley] I have no objection to Latour's theory of actants...Maybe I go further than Latour, for I might take inscriptions to be among the actants, right up there with fishers and molluscs, working and worked on, everywhere people go since the moment that our species came into being as *Homo depictor* (Hacking, 1992, p.36)

Hacking in describing laboratory science and experimentation uses a number of constructs which are closely related to those of Latour. The terminology is different but there remains a closeness in concepts. Hacking talks of ideas, things and marks where Latour uses human actors, nonhuman actors and inscriptions.

I can see no serious change of attitude between Latour (1987a) and (1993). In "Science in Action" Latour describes a number of mechanisms which relate to the cogency of ANT, introducing the concept of a "symmetrical anthropology" which is to include human and non human actants within the networks which he argues we must trace. My reading of this book is that it covers a number of related but disparate ideas about the fabrication of facts, translation and ANT. Amsterdamska (1990) in a somewhat dismissive review of "Science in Action" comments "I would like to turn to one of his [Latour] genuinely and not just apparently innovative propositions" namely to "consider symmetrically the efforts to enrol human and non human resources" (Latour, 1987a, p.258). Amsterdamska continues "Latour entreats us to consider science and technology as a heterogeneous network and to abandon all distinctions between humans and non humans" (1990, p.499). Clearly then the role of nonhuman actants in ANT is central certainly as far as Latour and it would seem Callon and

Law (1995) are concerned.

It is precisely this aspect of Latour's theorising that remains most controversial. In the extant literature in accounting and information systems the actant element of Latour's ANT is typically either (conveniently not mentioned) avoided (Bloomfield, 1991) or dismissed (Chua, 1995). Bloomfield states:

While the argument [in this paper] draws heavily on Latour, no attempt is made to evaluate his more ambitious and general thesis concerning 'technoscience'. (Bloomfield, 1991, p.705)

Chua in a strong reflection of Collins and Yearley argues that:

...unlike the work of Latour and Callon, this paper does not present inanimate objects such as computer software or hardware as actors which are identical to human agents (compare Callon, 1986). To do so reifies machines and technologies in a way which detracts from the purposive activities of their designers. It is people who make up accounting numbers in specific ways to try and achieve certain objectives. Software, by contrast, has neither interest nor agency. (Chua, 1995, p.117)

Though I am painfully aware of the legitimacy of these writers and their right to be selective in their use and interpretation of Latour, at the same time I find the alternative view more appropriate. I have given the alternative interpretations much consideration but I do not wish to apply such views in my own research. It would seem to me that the concerns of writers such as Chua and Collins and Yearley are influenced to a significant extent by a critical theory perspective, which I respect. On the other hand I feel much attraction for the arguments of Callon and Latour (1992) that their approach offers new possibilities for understanding and certainly description which are closed off in some other perspectives. The debate between Collins and Yearley (1992) and Callon and Latour (1992) engages directly the concerns of both sets of authors about what is gained and what may be lost in taking on another theoretical route in SSK.

Latour claims to be seeking to provide a new (or is it old) conception of knowledge and to eschew conventional and other existing epistemology. Callon as noted earlier has attested to the use of ethnographic methodology in some of his writings, as explanatory of his research approach. Both Callon (1982) and Latour (1993) have made reference to the relevance of an anthropological approach to the study of technoscience. It would also seem plausible to regard these writers as having a methodological base which may be seen as a development from the hermeneutic turn in the social sciences. Certainly Latour is not prepared to privilege either

subjective interpretation or assumptions of objectivity alone. He not only argues for the importance of the researcher's interpretations, through the process of translation and the structures which are thus adduced, he also warns of the dangers implicit in accepting the explanations of subjects via a process of attributing interests to human actors.

3.3.4 Collectives and Quasi-objects

Latour seeks (1993) to deny the project we call modernity. That modern epistemology that would have us rent nature and society asunder is a central culprit, if we would only accept that we "have never been modern", that we might see the absolute necessity of studying things and beings together. That these "collectives" are indeed what have always existed. It is the acceptance that in order to adequately understand the function of these "collectives" and "quasi-objects" that ultimately provides the justification for this thesis. Accounting, like technoscience (following Latour) cannot be studied fully without the use of holistic methods. In this manner we are able to see the interactions of not only human beings but also of human beings and the objects and machines which make up accounting systems. Latour is firmly in support of an holistic approach to research (in the accounting literature see Burchell et al, 1980, Hopwood, 1978, Humphrey and Scapens, 1996), though not in the conventional social science sense of an emphasis on the social, and an unwillingness to break up the research into identifiable objects, causes and effects. Latour wants to go further, through a symmetrical anthropology. This symmetry is not only to be in respect of the attitude taken to the social, "beings among beings" but also in a second way by adopting a similar view of inanimate objects as we do for human subjects. Latour speaks of "collectives" as being composed of associations of social groupings and machines, objects of "technoscience".

Sciences and technologies are remarkable not because they are true or efficient- they gain these properties in addition, and for reasons entirely, different from those the epistemologists provide ... **but because they multiply the nonhumans enrolled in the manufacturing of collectives and because they make the community that we form with these beings a more intimate one.** (Latour, 1993, p.108, emphasis added)

Other writers have expressed concern over conventional epistemology and the tendency to regard the divide between the subjective and the objective as overly deterministic (see also Hopper and Powell, 1985; Willmott; 1993 and 1994). In response to Burrell and Morgan (1979), Willmott (1993) calls for a rejection of the absolute incommensurability of paradigms

and "attention to the practical indivisibility of the subjective and objective dimensions of social reproduction" (see also Bhaskar, 1986, p.70-93). Other writers have presented arguments which have sought a solution to the problems raised by paradigm incommensurability. Reed (1985) has proposed pluralism as a way forward, while Morgan (1984, 1986, 1988) has moved on to advocate the use of "images" and metaphorical views of organisations in order to provide a more complete understanding of organisation. Hassard (1991) in organisational research has shown support for and sought to apply Morgan's ideas, while in the accounting literature Boland (1989) has noted the significance of these ideas to accounting research in organisations.

Latour certainly would agree with the need to avoid in the research process a simple distinction between subjective and objective interpretations. But while Reed and perhaps Morgan might stop at a call for a greater use of pluralism, Latour wishes to go much further in promoting a "symmetrical anthropology". While Reed sees pluralism as

prefer[ing] one-sided accounts which reveal part of the complexity and ambiguity of specific social phenomena ...the pluralist strategy offers a range of contrasting insights into the characteristic contradictions and tensions embodied in contemporary organizations. (Reed, 1985, p.201, emphasis added)

Such contributions may be seen as providing additional support for all existing approaches. Morgan also appears to appeal to the importance of recognising the contribution or potential contribution of existing perspectives. In contrast Latour seeks to convince us that only by accepting a major reassessment of our thinking can we proceed to greater understanding of our social "collectives" our "nature-cultures".

Latour (1993) provides a much more direct assault on our existing conceptions of knowledge and its accumulation and production. Latour's thesis may be seen as an interpretation of the Burrell and Morgan matrix, namely that social theory consisted of a series of dualisms, in which 'hard' nature determined soft 'society' (the objectivist view) and 'strong' society determined 'weak' nature (the subjectivist view). As research paradigms developed around these determinations the dualisms themselves were undermined. In studies of science the 'strong program' of the social determination of knowledge of the natural, and thus of nature itself provided a sufficiently improbable thesis that dualism itself was challenged.

"Society had to produce everything arbitrarily ... cosmic order, biology, chemistry and the laws of physics--The implausibility of this claim was so blatant for the 'hard' parts of nature ...and they also

revealed ... how badly constructed were the social theory as well as the epistemology that went with those denunciations. Society is neither that strong nor that weak; objects are neither that weak nor that strong. The double position of objects and society had to be entirely rethought'. (Latour, 1993, p.55)

Though others have sought to address this issue, (Clegg, 1995, identifies these moves with Popper, Wittgenstein and Heidegger) Latour adopts a different and particularly strongly empirical orientation.

In place of these moral plays Latour recommends, first, a symmetrical anthropology: one that treats all its objects of analysis equally, symmetrically--whether conventionally pre-modern or modern; whether conventionally of nature or of society, or something impurely in between. (Clegg, 1995, p.156)

The attention to an anthropological approach to the research process is based on an acceptance of the ability of such researchers to take account of all the pertinent features of a society, a collective, and seek to understand all of a foreign culture at once. Human and the non-human actors must be assessed using the same procedures and protocols. This anthropology must be one that practices a generalized symmetry. Latour describes this concept of symmetry in the following way:

Society, as we now know, is no less constructed than Nature, since it is the dual result of one single stabilisation process. For each state of Nature there exists a corresponding state of society. If we are to be realist in the one case, we have to be realist in the other; if we are constructivist in one instance, then we must be constructivist for both. Or rather, as our investigation of the two modern practices has shown, we must be able to understand simultaneously how Nature and Society are immanent - in the work of mediation - and transcendent - after the work of purification. Nature and Society do not offer solid hooks to which we might attach our interpretations, but are what is to be explained. (Latour, 1993, p.95)

The empowering or constraining influence of technology and machines has typically to be explained in purely social terms, as the result of social structures or power plays. Taking Latour's lead we need to appreciate the constitutive nature of technology, the manner in which machines are woven in to our collectives. It is only by studying the networks which are constituted by these human and non-human actors that we may hope to understand these interrelationships. A symmetrical anthropology which is able to study human and non-human actors without privileging the one over the other is Latour's prescription for averting the failure of modernist researchers to explain contemporary society. This is, according to Latour, a society which is increasingly typified and characterised by human beings together with technological devices. This movement of anthropology from studies of the extreme and the primitive, to topics of central concern to understanding of our own society is to be celebrated. Latour writes of the need to "bring anthropology back from the tropics", and illustrates his

concern over our (as moderns) propensity to insist on seeing our society (Western Society) as fundamentally different to others (the premoderns). As a consequence conventional anthropology has been relegated to studying those other cultures, or restricted to researching only the margins of western society.

3.3.5 Mixing the Social and Nature: The Concept of Nonhuman Actants

The place and effect of technology in the construction of society and in a general sense culture are at the centre of my interpretation of Latour and my beliefs about the nature of reality. Latour defends his ontology thus:

This move can be said either to elevate things to the dignity of texts or to elevate texts to the ontological status of things. What really matters is that it is an elevation instead of a reduction and that the new hybrid status give to all entities both the action, variety and circulating existence recognized in the study of textual characters and also the reality, solidity, externality that was recognized in things 'out of' our representations. What is lost is the absolute distinction between representation and things -but such is exactly what ANT wishes to redistribute through what I have called a counter-copernican revolution. (Latour, 1997, p.6)

For Latour it seems there is nothing more central to his philosophy than the acceptance, identification and interpretation of the effects upon science and society of material things, inscriptions, machines and nature. He is interested in discourse and semiotics, but these are partial and represent only the tools of his trade, the techniques which are a part of his interpretive repertoire. Latour has put great stress on the power of inscriptions and the role of laboratories in the construction of facts (see also Hacking, 1992, Robson, 1991, 1992, 1994). It is hard to argue that inscriptions are not in part discourse, a point which Latour would be happy to concede, but what he wishes to emphasise is that this is not all there is. Inscriptions are material, nonhuman actants (see also Hacking, 1992) and as a consequence their effects within the social cannot be reduced to their essence as discourse.

... what characterize[s] the modern sciences, not some epistemological break that would cut them off for ever from their prescientific past, modern knowledge and power are different not in that they would escape at last the tyranny of the social, but in that they add many more hybrids in order to recompose the social link and extend its scale (Latour, 1993, p.109)

Concerns over the dangers imposed by epistemological breaks are also expressed by other writers (Willmott, 1994). Sayer (1992), in discussing the "dualisms" which serve as the basic distinction between subject and object underlying our concepts of knowledge in natural and

social science, presents a table of dichotomies Table 3.1

Table 3.1: Dichotomies of Knowledge

people	nature
individual	society
subjective	objective
thought	action
mental	material
mind	body
knowledge	practice
beliefs	facts
expressive function of language	referential/propositional function of language

(source Sayer, 1992, p.22)

Sayer (1992) suggests that:

although these dualisms are 'second nature' to us and probably look quite harmless, I shall argue that every one of them is beset with misconceptions which generate problems in our understanding of the world and of ourselves. The dualisms do not operate singly but in parallel, providing mutual reinforcement, so that in the vertical dimension of the diagram, meanings or associations 'leak' from one term to the next. Sayer (1992, p.23)

Here Latour has an ally in the opposition to the dualisms which are taken so much for granted in much of our culture. It is the setting up of these categories as dualisms, absolute opposites, that is so objectionable to Callon, Latour and their colleagues. Bhaskar (1989, particularly p.32-37) presents an interesting discussion of some of these issues in developing his "transformational model of social agency" (TMSA)². The aim of these writers is to allow for the mixing, the leaking of these terms from one to the other not only in the vertical but across the "internal divide". It is a bold endeavour, if not foolhardy, but Latour feels that such an approach, such an epistemology, is required to escape the problems which Sayer reflects on:

people are separated from society and their own activity, making it difficult for us to understand how thought actually relates to and functions in nature and society. This implies not only an inadequate theory of knowledge (epistemology) but an alienated view of ourselves. (Sayer, 1992, p.23)

It is very much this aspect of understanding which is at the centre of Latour's objections to conventional anthropology and traditional epistemology. It is the convention to keep studies of the social or the text, quite apart from nature, objects and science which restricts our

understanding of "technoscience". It is only by mixing these elements, by recognising the structure of the "collectives", that we create, that will enable us to increase our ability to explain how science and society develops. This "empirical" approach is at once similar and different to conventional qualitative research. It is similar in its use of like methods but different in that the objects of study are both human and non-human, within the same research design. It is an approach which seeks explanation in part in human motivation but in part also in the influence of the quasi-objects of technoscience. Though there are certain similarities between writers such as Sayer and Latour, Latour goes rather further than any of the writers mentioned above in wanting to reorient our world view, to the extent of wishing to overthrow modernity itself. Not by revolution, which he feels is a quite absurd proposition but by a tortuous argument which amounts to a proof that "we were never Modern" in the first place.

we do not have to create this Parliament out of whole cloth, by calling for yet another revolution. We simply have to ratify what we have always done, provided that we reconsider our past, provided that we understand retrospectively to what extent we have never been modern, and provided that we rejoin the two halves of the symbol, broken by Hobbes and Boyle as a sign of recognition. Half of our politics is constructed in science and technology. The other half of Nature is constructed in societies. Let us patch the two back together, and the political task can begin again. (Latour, 1993, p.144)

Latour argues that the consequence of the acceptance of the inherent interdependence of the social with nature is to accept that the foundation of much of our modern literature, and research, is illusory, since it is built on a faulty epistemology. Latour uses diagrammatic representation (inscriptions) a good deal to try to make his case. This is especially the case for his argument against the epistemology of modernity and his attempt to replace this with a return to a premodern or "amodern" view of knowledge. Latour provides a summary (see Table 3.2) of his "symmetrical anthropology" the theoretical justification of which lies behind his and others "empirical studies of science"

Table 3.2 Constructing a Symmetrical Anthropology:**What is retained and what is rejected**

	What is retained	What is rejected
<i>From the moderns</i>	<ul style="list-style-type: none"> -long networks -size -experimentation -relative universals -final separation between objective nature and free society 	<ul style="list-style-type: none"> -separation between nature and society -clandestineness of the practices of mediation -external Great Divide -critical denunciation -universality, rationality
<i>From the premoderns</i>	<ul style="list-style-type: none"> -non-separability of things and signs -transcendence without a contrary -multiplication of nonhumans -temporality by intensity 	<ul style="list-style-type: none"> -obligation always to link the social and natural orders -scapegoating mechanism: <ul style="list-style-type: none"> *ethnocentrism *territory -limits on scale
<i>From the post moderns</i>	<ul style="list-style-type: none"> -multiple times -constructivism -reflexivity -denaturalization 	<ul style="list-style-type: none"> -belief in modernism -ironic reflexivity -critical deconstruction -anachronism

(source Latour, 1993, p.135)

Latour seeks to achieve something quite dramatic here. He insists that we must take seriously these epistemological issues. We must follow him in a radical restructuring of the modernist world view. Not to move to a postmodern interpretation but beyond this or indeed before this. The postmoderns are according to Latour suffering from too willing an acceptance of a modernist framework, such that they are interminably limited in their analysis and ability to see the world appropriately.

The postmoderns believe they are still modern because they accept the total division between the material and technological world on the one hand and the linguistic play of speaking subjects on the other ... (Latour, 1993, p.61)

There is a great deal more analysis and theoretic argument (see Latour, 1993, p.130-154) to the establishment of table 3.2, above. The following statement is indicative.

The balance sheet of this examination is not too unfavourable. We can keep the Enlightenment without modernity, provided that we reintegrate the objects of the sciences and technologies into the Constitution, as quasi-objects among many others - objects whose genesis must no longer be clandestine, but must be followed through and through, from the hot events that spawned the objects to the progressive cool-down that transforms them into essences of Nature or Society. (Latour, 1993, p.135)

Table 3.2 presents quite a challenge to traditional epistemologies and established fields of research. Latour is nothing if not controversial. Existing rules are broken, except that Latour never accepted them in the first place. An indication of the approach taken by Latour may be seen in the manner in which he describes the contribution of the postmoderns to his reconstructed epistemology. I will describe briefly the manner in which Latour makes selections to represent the postmodernists and summarise the arguments he uses in justification. Clearly this cannot do justice either to Latour (1993, particularly p.91/142) or for that matter to the postmodernists whom he tends to paraphrase.

Latour describes the postmoderns, with some irony, as "moral philosophers". It is impossible he says to "... conserve their irony, their despair, their discouragement, their nihilism, their self-criticism, since all those fine qualities depend on a conception of modernism that modernism itself has never really practised." (Latour, 1993, p.134). But Latour proceeds to argue that we can adapt from postmodern practices in order to construct a symmetric anthropology, "... as we add the lower part of the Constitution to the upper part, many of the intuitions of postmodernism are vindicated ...Take away from the postmoderns their illusions about the moderns, and their vices become virtues - nonmodern virtues!" (p.134):

"... we can save deconstruction - but since it no longer has a contrary, it turns into constructivism and no longer goes hand in hand with self-destruction.";

"We can retain the deconstructionists refusal of naturalization - but since Nature itself is no longer natural, this refusal no longer distances us from the sciences but, on the contrary, brings us closer to sciences in action." ;

"We can keep the postmoderns' pronounced taste for reflexivity--but since that property is shared among all the actors, it loses its parodic character and becomes positive."

"... we can go along with the postmoderns in rejecting the idea of a coherent and homogeneous time that would advance by goose steps - but without retaining their taste for quotation and anachronism which maintains the belief in a truly surpassed past." (ibid, p.135).

Though controversial, there is certainly an intuitively appealing logic at work in the proposals Latour makes. But there remains much work to do to incorporate these ideals into accounting research. The benefit may be profound and an excellent precedent has been set by the intriguing research which Latour and colleagues have contributed in their "empirical studies of science". The significance to accounting research of a framework which allows explicit incorporation of the role of "quasi objects" in the production and reproduction of social reality is at the centre of what this thesis seeks to explicate. Accounting and other information systems have been treated as part of the groups of "collectives" within the hospital. These quasi-objects are part of the translation process by which others are enrolled into the process

of change or convinced to become an agent within a network committed to the establishment of casemix accounting and clinical budgeting systems. The system itself does make certain demands and does feature on occasion with human actors also, in establishing inscriptions, in the form of accounting and other reports, which serve to convince others.

These effects cannot be adequately explained in the field of accounting, any more than in the sciences, without an explicit framework which allows us to consider the role of other than "social" actors. It is the combination of the human actors with other inanimate objects within the "collectives" that allows us to see and describe the changes which are taking place within organisations such as the hospital in response to the health reforms. To concentrate on the system changes alone would privilege a managerial perspective and be an entirely partial view of the organisation, while a concentration on culture and the social will not allow us to see the "circuits of power" which are formed within the networks and collectives established as human and non-human actors come together.

Since the invention of longer networks and the increase in size of some collectives depends on the silence they maintain about quasi-objects, how can I promise to keep the changes of scale and give up the invisibility that allows them to spread? Worse still, how could I reject from the premoderns the lasting nondifferentiation of natures and societies, and reject from the moderns the absolute dichotomy between natures and societies? How can size, exploration, proliferation be maintained while the hybrids are made explicit? Yet this is precisely the amalgam I am looking for: *to retain the production of a nature and of a society that allow changes in size through the creation of an external truth and a subject of law, but without neglecting the co-production of sciences and societies.* (Latour, 1993, p.135)

In the above quote Latour recognises the conventional absurdity of his new epistemology. He sums up neatly the absolute conflict between his desire for the establishment of an unmodern theory of knowledge and the modernist view. But is this so absurd or is it just realist[ic]. Are our dichotomies and dualisms not becoming a little overstretched? Is there not room for taking seriously the extent to which science and technology, not to mention media, are able to constrain and influence without human intervention? Is society not indeed the product of technology as much as technology is the outcome of our culture, and our cultures?

By defining a total separation between the scientific and political representations, the double translation-betrayal became possible. We shall never know whether scientists translate or betray. We shall never know whether representatives betray or translate. (Latour, 1993, p.143)

Latour displays elements of a critical realist ontology in his analysis and writings. This basic view of the importance of structures is applied through an acutely developed interpretive style of empirical research³. Latour attempts more than others to give equal weight to human and

inanimate objects within the research frame. A particular understanding of Latour is presented in the following comment from Clegg:

The fiction of the Leviathan and the fiction of Nature cannot be contained. They leak and leach into each other. Nature's laws cannot be known without human construction: from primitive pumps to sophisticated electrospectrographs that which, putatively, belongs to Nature can only utter its message where human agency contrives that it can do so. Yet, simultaneously, the ingenious scientists absolve responsibility for the message received, except in the residual categories of 'error'. Society, the modern Leviathan, cannot arrest time: new times produce new constructions of the fiction; the subjectivity that individual citizens are supposed to have surrendered to the Leviathan reasserts itself. (Clegg, 1994, p.155)

In "Science in Action" Latour (1987a) structures a whole text around the falsity of the traditional dualism between object and subject. Latour seeks to show the dangers of taking a simplistic view, as he sees it, of the presentation of "settled" science in comparison to "unsettled" science or "science in action". To understand how "controversies" were settled we must follow "scientists in action" into their laboratories and through the literature as it developed (cf. Bhaskar⁴, 1986). If we do not do this the picture obtained will always be illusory and pristine (Latour, 1987a, p.53). Scientists will always tend to present a picture of settled science as one in which nature has been fully and truthfully represented.

The two faces of Janus talking together make, we must admit, a startling spectacle. On the left side Nature is cause, on the right side consequence of the end of controversy. On the left side scientists are *realists*, that is they believe that representations are sorted out by what really is outside, by the only independent referee there is, Nature. On the right side, the same scientists are *relativists*, that is, they believe representations to be sorted out among themselves and the actants they represent, without independent and impartial referees lending their weight to any one of them. We know why they talk two languages at once: the left mouth speaks about settled parts of science, whereas the right mouth talks about unsettled parts. On the left side polonium was discovered long ago by the Curies; on the right side there is a long list of actions effected by an unknown actant in Paris at the Ecole de Chimie which the Curies propose to call 'polonium'. On the left side all scientists agree, and we hear only Nature's voice, plain and clear; on the right side scientists disagree and no voice can be heard over theirs. (Latour, 1987a, p.99)

3.4 Discussion

An 'actor' in ANT is a semiotic definition -an actant-, that is, something that acts or to which activity is granted by others. It implies no special motivation of human individual actors, nor of humans in general. An actant can literally be anything provided it is granted to be the source of an action. Although this point has been made over and over again, the anthropocentrism and sociocentrism is so strong in social sciences (as well as in the critiques of social explanations) that each use of ANT has been construed as if it talked of a few superhumans longing for power and stopping at nothing to achieve their ruthless goals... *If a criticism can be levelled at ANT it is, on the contrary, its complete indifference for providing a model of human competence. There is no model of (human) actor in ANT nor any basic list of competences that have to be set at the beginning because the human, the self and the social actor of traditional social theory is not on its agenda.* (Latour, 1997, p.4)

Problems remain in the interpretation of Latour's sociology of translation and of ANT. Latour

devotes the major part of two books arguing for two very major, related views of knowledge and the research process.

a\ The adoption of an "anthropological" approach to research, ie. an holistic view of research and the need to use a range of research tools and techniques which may traditionally be regarded as incompatible

b\ Ideas related to our conception of the research object.

1/ Cannot split the technical from the social.

2/ The importance of quasi-objects.

3/ That society is composed of "collectives" which are constituted by humans and objects (machines/technology).

4/ The crucial importance of identifying actors - by following, "tracing", the networks as they are built up.

5/ Treating all actors symmetrically.

Latour is anxious to avoid classification wherever possible. I would venture that the above are all reasonably regarded as elements of a general sociology of translation, which may well involve other concepts not listed here. On the other hand I would regard ANT as being constituted by a subset of these elements. In this sense I would tend to see S. of T. as being more broadly constituted than ANT.

ANT is in itself not homogeneous (see Law, 1997). "[the ANT] theory has been often misunderstood and hence much abused" (Latour, 1997, p.1). I feel that my purpose is better suited by concentrating upon the sociology of translation and in particular Latour's emphasis and construction of non-human actants and their influence in the structuring of society and our "culture". But S. of T. and ANT are as I have indicated very closely interrelated. In this respect my use of S. of T. is almost a matter of a personal preference for a term which I believe to have been less abused than ANT.

I accept the emphasis on the importance of process and the tentative and developmental aspects of networks which is a feature of both ANT and sociology of translation. But at the same time I wish to emphasise especially the representation/interpretation of accounting systems as technological objects ("quasi-object"). They are best conceived as "black boxes"

which have often been relatively "stabilised" prior to their introduction to HW. Accounting and other information systems such as those related to medical coding are powerfully constitutive actants within the hospital able to influence the actions and perception of human actors. This will be the subject of the letter part of the thesis (Chapters 7 through 10).

In spite of Latour's reticence to accept any semblance of conventional modern philosophy it is still important to classify aspects of his work from a more conventional theoretical framework (but see also Potter, 1996 and earlier discussion in section 3.3.3.). The interest in structure in the form of networks appears to accept some realist assumptions, while Latour clearly adopts a strong holistic approach to the research endeavour; "... we need to get rid of all categories like those of power, knowledge, profit or capital, because they divide up a cloth that we want seamless in order to study it as we choose." (Latour, 1987a, p.244)

According to Latour there is much similarity between the essential elements, actions and devices which make up the sciences and indeed effect the construction of social relations. In the following quote Latour seeks to summarise the essential structures of 'technoscience', which he clearly regards as being much wider than that which are commonly termed the hard sciences.

To distinguish between or oppose science, politics and economics would be meaningless from our point of view, because in terms of size, relevance and cost, the few figures that decide the Gross National Product or the political balance of forces are much more important, trigger much more interest,, much more scientific method than a new particle or a new radio source. All of them depend on the same basic mechanism: calibrating inscription devices, focussing the controversies on the final visual display, obtaining the resources necessary for the upkeep of the instruments, building nth order theories of the archived records. No, our method would gain nothing in explaining 'natural' sciences by invoking 'social' sciences. There is not the slightest difference between the two, and they are both to be studied in the same way. Neither of them should be believed more nor endowed with the mysterious power of jumping out of the networks it builds. (Latour, 1987a, p.256)

Latour seeks to convince us that 'technoscience' goes far beyond a crude definition involving science and technology. He wishes us to read and interpret developments in society much more broadly than this. He strives hard to draw examples from not only the so called hard sciences: medicine; physics; chemistry but perhaps much more significantly from geology; geography; economics; management and politics. This is Latour's Technoscience, any activity which involves the accumulation of knowledge, the use of past knowledge and the application of knowledge in ways which affect us. Technoscience is defined as simultaneously strong and weak. It may comprise ideas and concepts of great strength within its sphere of influence but can be quite weak when attempts are made to apply ideas beyond the network of the specialism

itself.

Though accumulation of knowledge is accepted by Latour as a central feature of the process of development, he regards ideas and knowledge as essentially very frail. Only through other processes such as inscription and translation do ideas become accepted, as powerful influences on society. The process of translation takes a central place in Latour's explanation of the process through which technoscience develops and comes into being. This concept is not unlike Rorty's 'metaphoric redescriptions' (1989). Rorty suggests:

[we]... think of the history of language, as Darwin has taught us to think of the history of a coral reef. Old metaphors are constantly dying off into literalness, and then serving as a platform and foil for new metaphors. This analogy lets us think of "our language" - that is, of the science and culture of twentieth century Europe - as something that took shape as a result of a great number of sheer contingencies. Our language and our culture are as much a contingency, as much a result of thousands of small mutations finding niches (and millions of others finding no niches), as are the orchids and the anthropoids (Rorty, 1989, p.16)

This has much in common with the way in which Latour describes the 'action in science'. The tentative nature of the translation process, its controversial character and lack of predictability are all central to following 'scientists in action'. Knowledge becomes accepted over time as more and more people come to rely on it. Eventually becoming 'black boxes' or incorporated within black boxes. Concrete pieces of technoscience or theoretical constructs, such as mathematical formulas, which become 'taken for granted' and used and accepted by others without question. Nevertheless Latour prevails on us not to grant these devices too much power, even black boxes of established 'facts' are limited in how they may influence society.

The results of what society is made of do not spread more or faster than those of economics, topology or particle physics. These results too would die if they went outside of the tiny networks so necessary for their survival. A sociologist's interpretation of society will not be substituted for what every one of us thinks of society without *additional struggle* without textbooks, chairs in universities, positions in the government integration in the military, and so on, exactly as for geology, meteorology or statistics. (Latour, 1987a, p.257)

It is in this manner that Latour seeks to emphasise the restrictions which surround the 'spread' of knowledge and its degree of influence over society and the social. He is insistent that we do not inveigh facts and machines with power and significance which they do not possess. For Latour technoscience is much more of a process, much more the coming together of chance events and acquaintances and entirely dependent on the enrolment of actors. Progress does not consist of the irresistible march of technical development and the successive creation of great advances by individual genius. To Latour it is the context and the process which are the key.

The slow pattern of alliances which form as weak hesitant possibilities are transformed by many related and unrelated events into widely accepted and 'socialised' technologies. Latour warns us against reifying any 'science'.

... in the case of economics, the history of a science is that of the many clever means to transform whatever people do, sell and buy into something that can be mobilised, gathered, archived, coded, recalculated and displayed... Those who sit inside the many Bureaus of Statistics may combine, shuffle around, superimpose and recalculate these figures and end up with a 'gross national product' or a 'balance of payments', exactly as others, in different offices, end up with 'Sakhalin island', 'the taxonomy of mammals', 'proven oil reserves' or 'a new planetary system'. (Latour, 1987a, p.227)

The social sciences are in this respect much the same as the natural sciences, they mobilise essentially similar techniques of inscription, mobilisation and translation in order to accumulate knowledge and thereby convince others of the correctness of their solutions. All these processes are aimed at the same objective, that is the construction of facts and the enrollment of actors into particular problematisations. Networks are built in order to strengthen one view or another, to enable "facts" to be established which favour particular conceptions of the world, particular conceptions of reality. It is through this process that people seek to problematise one issue rather than another, and to establish their solutions as those which are necessary to address those conceptions. It is through such processes that health policy issues were passed in order to convince others of the need for more accountability and more management. The efficiency of health service provision in New Zealand became problematised (see Chapter 6).

3.5 Conclusion

Nature remains mobilisable, humanizable, socializable. Every day, laboratories, collections, centres of calculation and of profit, research bureaus and scientific institutions blend it with the multiple destinies of social groups. Conversely, even though we construct Society through and through, it lasts, it surpasses us, it dominates us, it has its own laws, it is as transcendent as Nature. For every day, laboratories, collections, centres of calculation and of profit, research bureaus and scientific institutions stake out the limits to the freedom of social groups, and transform human relations into durable objects. (Latour 1993, p.37)

It is this bringing in of non-human allies that adds immeasurably to the complexity of modern society, as compared to the machinations during Machiavelli's time. The complexity is a function of the uncertainty which is introduced as allies are brought in. This is never a certain process, technology does not always work, inscriptions may be made to tell a different story. Technology, or machines may be as hard or indeed harder to keep in line as people. It is as a

result of the complexity of these interactions of humans with non-humans that understanding the processes at work in science or within organisations and society must be built on a tracing of the networks which are constructed by these alliances among human and non-human actors.

Though Latour finally suggests the "empirical studies" will allow us to seek answers to the most significant issues of [un]modern society there are inevitably serious problems with a research epistemology which is so broadly defined. We are exhorted to examine everything at once, to endeavour to lookout all possibilities, to take an outlook of absolutely holistic nature. It would seem that there is great scope for innovative research here, and at the same time great opportunity for fundamental confusion (this issue will be reconsidered in chapter 11). Clearly some excellent studies have been carried out by Latour and his colleagues, but 'lesser mortals' might feel more [comfort]able with more comfort⁵.

The advantages of a more restricted view of an appropriate methodology and research site will continue to draw many researchers. Many valuable contributions to our appreciation of the roles of accounting within organisations have been provided by other writers using more conventional sociological epistemologies, and these contributions will continue. But there is increasing evidence that accounting and other organisational researchers are achieving interesting insights in their research on organisations by using a Latourian framework.

The next chapter will describe the application of Latour's rules of method to inform the research process. The discussion will show how borrowing from Latour enables the explication, description and observation of practices within the organisation studied, focussing on the technologies in use.

Notes

1. Latour (1987a) suggests that what Sartre said of humans - that their existence precedes their essence - applies to "all actants: of the air's spring [this is a reference to Boyle's vacuum pump, which is discussed further later in this section] as well as society, of matter as well as consciousness" (p.86).

2. Bhaskar's (1989) Critical Realism and his model of the social process (TMSA) includes 2 concepts which are relevant to my interpretation of Latour - emergent powers and depth realism. A feature of depth realism is the acceptance of a many layered social and natural world. In this view of "reality" a central argument is that in general though layering is accepted it is not accepted that one layer can be explained away by developments in knowledge at a more fundamental level ie. biological processes may not be reduced to an explanation in terms of physics of chemistry. In a similar way Latour's "quasi-objects", man made technologies, possess emergent powers which affect other actors (human and non-human) and it is not possible to reduce these objects or their effects to explanations solely related to human actions/reactions or for that matter to their physical characteristics.

3. I would regard the philosophical position of Latour in this respect as having much in common with Bhaskar (see Bhaskar, 1978; 1994 and Collier, 1994, particularly chapters 5 and 6).

4. Collier suggests that Bhaskar's "own work is almost entirely based on the practices of sciences" (Collier, 1994, p.19). There are clear resonances here with Latour's desire that we ought to "follow scientists around".

5. Bhaskar's (1989) Critical Realism and his model of the social process (TMSA) includes 2 concepts which are relevant to my interpretation of Latour - emergent powers and depth realism. A feature of depth realism is the acceptance of a many layered social and natural world. In this view of "reality" a central argument is that in general though layering is accepted it is not accepted that one layer can be explained away by developments in knowledge at a more fundamental level ie. biological processes may not be reduced to an explanation in terms of physics of chemistry. In a similar way Latour's "quasi-objects", man made technologies, possess emergent powers which affect other actors (human and non-human) and it is not possible to reduce these objects or their effects to explanations solely related to human actions/reactions or for that matter to their physical characteristics.

Chapter 4: Seeking a Latourian Understanding: Case Method and Research Design Issues

4.1 Introduction

The chapter will provide a detailed exposition of the research process. The initial discussion will explain what was done in terms of data collection and the identification of relevant theory. The manner in which the research process developed and the manner in which the data were theorised is also described. Drawing from Latour has enabled the researcher to develop a particular style of intensive case research informed by literature in the 'empirical studies of science'.

I approached the research activity as a processual activity, in which it is necessary to seek to be involved, to some extent, in the developments at the hospital over a period of time. The techniques I have used to gain insight and understanding of the organisation and the organisational actors include in depth case analysis developed through unstructured and semi-structured interview techniques and documentary analysis (Yin, 1984, McCracken, 1987, Ragin and Becker, 1992). The research activity at HW will be set within a broader framework which will describe the context of the health reforms (see chapters 5 and 6) and the changes at an individual organisational level.

The structuring of the research activity has involved a concern to enable a close examination of the process through which a clinical budgeting and information system has been "fabricated". In the next section aspects of the environment will be described. This section will present my personal reflections on the research activity in which I was engaged. The following section presents and describes Latour's Rules of Method and Principles. I then provide a discussion of the Rules and Principles, in order to emphasise their relevance to my research design. The next section will show the relevance of Latour's ideas to the study of system change at the hospital. The final section will provide concluding comments on the significance of the theoretical framework adopted.

4.2 Aspects of the Research Process

Though a great deal of the impetus for change was emanating from outside the hospital, as the government policy on health reforms took effect, these largely legislative and structural changes were only part of the story. A central concern I have in my thesis is to give the appropriate level of emphasis to the way in which the health reforms have given effect to significant changes at the organisational level. Very major changes have occurred in hospitals, and other providers of secondary health care providers. My story is of some of these changes at the Waikato CHE.

Field research was commenced without an explicit theoretic framework, consistent with an open interpretive approach (Bryman, 1992). Callon and Latour provide in the "sociology of translation" a "skeletal framework"¹ Laughlin (1995) which can provide a useful sensitising device for the researcher. Latour's methods are not specific about data analysis but provide insights about what constitutes appropriate data collection and then a framework for theorisation. Latour's methodological constructs provide what Laughlin describes as a sensitising of the researcher. Laughlin argues that while the "perceptual rules" used in the research are "public and clear", their nature is only "skeletal" and needs to be developed during and through the research process (Ibid, p.84).

4.2.1 Issues of Access and Data Collection

Access to HW was secured partly as a consequence of the involvement of others at the University of Waikato at the hospital, and partly as a result of the inclinations and character of the then Director of Finance at HW. When I approached the CHE on 24th June 1994 it was as a result of an introduction by Dr Stewart Lawrence, associate professor in accounting at the University of Waikato. Stewart was one of two supervisors of my thesis, at this time, with professor Tony Lowe. At my first meeting with the Director of Finance of the hospital Stewart and I attended together. A number of other staff were actively researching at the hospital at this time or had completed research in the recent past. In accounting several of my colleagues were currently engaged in research on quite diverse topics. A number of academics from other areas of the university had significant interests in the hospital and the health sector more generally.

I had attended this first meeting at Stewart's suggestion. Having at this time no particular

interest in health from a research perspective. I came away from the meeting with an generous offer of access and with my appetite whetted to understand more about what it was that was so important about accounting for clinical procedures. What was so special about medical coding and was it really as complicated as I was told at this first introduction to the hospital.

My lasting impressions from this first meeting were of the confidence of Joe Howells, the Director of Finance, and his need to explain his ideas graphically. He rose several times from the round table at which we sat in his office to draw figures on his whiteboard. Over the course of the meeting, which lasted probably about 65 minutes, he would have done this four or five times. He would be very careful in the depictions he placed on the whiteboard and would then talk through them for some time. One of the diagrams I present in chapter 7 (see figure 7.1) was first encountered by me at this first meeting with Joe Howells.

Joe came over as very confident of his ideas. Joe appeared to have a strong self belief, though lacking a background in health. His concepts of accounting and the role and nature of management information had been developed in an export shipping environment. The Director of Finance explained in this first meeting that he had set an agenda for change within the organisation, and had come to occupy a central role in the change process. He had been in post since 1991 and had already implemented a number of accounting systems changes at the hospital, including a completely new general ledger system and a much expanded chart of accounts for the organisation. Joe had also overseen a considerable expansion in the size of the finance function by this time, in mid 1994. All these changes were in train prior to my first involvement at the hospital. What was relatively new was the involvement of Joe Howells and the finance function in clinical budgeting.

Joe appeared to be particularly interested to involve outsiders, such as university academics like myself, in the systems changes taking place within the hospital. It was rather as though this could only help to confirm to others his commitment to change within the organisation. In the initial stages of my interviews and meetings with the people at the hospital I found this disconcerting. I wondered what it was that Joe Howells might be expecting in return. In fact nothing was ever asked. A couple of months later when I was more familiar with the culture at the hospital, particularly within the casemix team, I offered to write up some of my findings in order to provide feedback to Joe and other informants. This both gave me an opportunity to get substantial feedback while offering them something worthwhile in return for the access

I had been given. This offer was seized upon by Andy Reid the manager of the TCB project. He and Joe were both very keen to be involved in commenting on the papers. Two thirty page papers were written up by me and exchanged among people at the hospital who had had an involvement in the early part of my research. These papers attracted comment from a variety of informants. One was on blood processing and costing. This paper was circulated to Andy, as TCB manager, but importantly for me also to Grant Storey, the blood centre manager and to Willem Sandberg, who was now (December, 1994) project leader (TCB) Clinical Services (prior to this a member of the TCB team). The other paper was an overview of the TCB project and the implementation of casemix budgeting.

These exercises primarily enabled me to confirm with the participants the views I had taken from my interviews with them. The attraction for Joe and a lesser extent Andy was some public exposure for the “innovative” ideas and systems work which were being carried out at HW. They asked that I submit the papers for publication. This I did early in 1995 to the New Zealand Accountants Journal. At this stage they were much shorter papers, probably some 6000 to 8000 words, compared to the original 20000 plus words. Three papers were published describing the casemix and related systems changes at HW in mid 1995 (Lowe, 1995a, 1995b, 1995c).

The above was one strategy for confirming my findings. A number of other approaches were also used. I do not subscribe strongly to the concept of a straight feedback of interview transcription. Though this may work well in some instances I do not believe it would have been especially effective in my research. Alternatives were used. One approach that I made extensive use of was to model the accounting system processes, in an attempt both to understand how the techniques were being deployed but also as a way of confirming with my interviewees my understanding. This enabled me to check with them both that I had the right message, in terms of what they were trying to convey about the way the system worked and also that we concurred about how elements of the casemix accounting system actually operated. The results of these to some extent technical exercises lay behind the presentation of my research data. This is particularly the case in all the case chapters (chapters 7 through 10), and especially so in chapters 9 and 10.

This modelling took the form usually of spread-sheeting of aspects of the casemix technology. I used this to check my understanding and confirm results for such areas as blood costing and

the use of “relative value units” (see chapter 9, section 9.3.2) within the casemix system.

For most interviews my records consisted primarily of notes taken during the meetings and additional notes written up immediately following, twelve were taped. Three of the meetings were tape recorded and transcribed. In the other instances I relied on notes taken during the face to face meetings and more extensive write ups immediately following interviews. These were confirmed with participants on an ad hoc basis. Typically I would visit my interviewees on more than one occasion. I would usually use such meetings to confirm points from earlier meetings, or clarify issues relating to the accounting system and casemix technology. Some of these points also related to the authentication of textual material. Management reports were discussed to establish the extent to which the casemix people felt they were relied upon by operational staff and managers prior to discussions with operational people. On other occasions I would go back to confirm to what extent certain aspects of the casemix reporting system was actually being distributed or implemented. This was important since in many instances implementation of particular modules was partial, and or restricted to certain subunits within say surgery or clinical services.

Over the time of my initial visits, covering just over two months and sixteen interviews, it became clear that the casemix team had been built up over the 9 to 12 months prior. This group, varying between six and nine individuals, had a role to champion the casemix implementation process within the organisation. The group was headed by Andy Reid, who had been head-hunted for the position. He had considerable experience in information systems implementation in the UK health sector. Andy laid considerable stress on the lengthy nature of systems implementation of this type. At times there appeared to be some conflict with Joe over the speed of implementation of aspects of the casemix project.

The casemix team was made up of individuals with a variety of backgrounds. In all I completed 25 interviews with casemix team members. Most of these were with Andy (10), but extended to cover five other members of the team. Only one of these individuals had an accounting background, with private sector experience in financial appraisals. One was a medical coding specialist from Canada, part of a staff exchange. Of the other two, one had largely an administrative background and the other was a qualified nurse. The group had been assembled with some care to include the breadth of experience it was felt desirable to give the casemix team the necessary mix of qualities and background. The majority of the interviews I conducted

with casemix people were in the later part of my site visits. Eight interviews out of a total of thirty two in the very intense early part of the research field work, over a period of six months. Then as my site visits became increasingly selective, seventeen interviews out of a total of twenty seven. This later part of the research covered a period of just over twelve months, but was of greater intensity in the first six months of that period.

The research process developed over the initial visits to the hospital. What was clear at an early stage, indeed from my initial visit with Stewart, was that casemix accounting was what Joe thought I ought to be interested in and fortunately I was. It did not take long for me to be absolutely intrigued by what all the fuss was about. My background in management accounting gave me an instinctive and strong interest in the idea of, not only, how but why one might want to apply accounting and cost information to such a complex area as the provision of secondary health care. The idea of such a compellingly problematic area as clinical casemix was too much of a challenge to resist. The complexity of establishing product mix in clinical procedures alone was daunting, even with my layman's knowledge of medicine. Add to this the complex interrelationships involved in clinical and other support services, even blood products and byproducts. Decisions on overhead allocations across all this. Clearly this was an Alladin's cave to a management accountant.

My interest was raised though my uncertainty was also very high. As interviews developed and opportunities arose my perspective upon, and objectives for, the research changed. Access had been unanticipated, but once offered, the site had appeared attractive and challenging. My approach to the research was investigational. Initially this seemed the obvious position to take since I had no particular experience of the management or accounting systems of public sector organisations, and no experience other than that of the layperson of medical services. The first 10 or 12 interviews were quite exploratory, both for myself and for the interviewees. I took the opportunity at this stage to seek to understand the environment within the hospital, and the reactions and perceptions of the subjects of the interviews to the changes affecting the health system in general, and the hospital in particular.

At this time I also undertook a good deal of background reading, particularly of health policy and particularly New Zealand health policy, in order to acquaint myself with the environment facing the New Zealand health sector. This was valuable in order to establish an appreciation of the organisations involved in the health sector and to sensitise the researcher to the language

of health reform. Without the ability to display some understanding of the health sector environment it would have proved very difficult to establish the necessary rapport with people at the hospital. As Bourdieu notes the researcher's ability to obtain an appreciation for the views of the people who are the subject of the research is severely in doubt, without the establishment of such a relationship.

If the research interview relationship is different from most of the exchanges of ordinary existence ... it is, in all cases, a *social relation*. This has some effect on the results obtained (the effects being variable according to the different parameters which influence them) ... scientific questioning, by definition, excludes the intention of exerting any type of symbolic violence capable of affecting the responses; yet it still remains the case that on these matters one cannot trust simply to one's own good faith, because various kinds of distortion are embedded in the very structure of the relationship. It is a question of understanding and mastering these distortions. And doing this as part of a practice which may be reflective and methodical, without being the application of a method or the embodiment of specific theoretical thinking. (Bourdieu, 1996, p.18)

Bourdieu (1996) argues that 'only reflexivity, which is synonymous with method, but a *reflex reflexivity* based on a sociological feel or eye enables one to perceive and monitor *on the spot*, as the interview is actually being carried out, the effects of the social structure within which it is taking place. 'Only by making such an effort to understand our own presuppositions can we claim to be engaged in the scientific investigation of presuppositions' (Bourdieu, 1996, p.19). I believe firmly in the idea that only in relatively unstructured interview situations is it possible to engage such approaches as Bourdieu describes. I see this reflex reflexivity of which Bourdieu speaks as a very subjective and individualised nature. The ability to "monitor on the spot", to use "feel" or a "sociological eye" are what I believe I strive for in my research. The ability to put oneself, to at least some extent, in the others' position is an ability which can only ever be partially successful and is always tentative and uncertain (Collins and Yearley, 1992a).

I anticipated a research process which would be field intensive and longitudinal. This approach would require a considerable degree of access to different members of the organisation over a period of at least one year. In the event field visits continued over a period of just over 18 months, and access was accorded to me with a considerable degree of organizational largesse. I can only recall on one occasion contacting a clinician who declined to be interviewed, during a period of particular strain within the hospital, about 2 weeks after the chief executive resigned. Other than this instance the organisation permitted me access over a period of time and to a range of people, from managerial, accounting and clinical backgrounds. I have recorded tapes and notes of 59 interviews (appendix 6.1 for details). In addition 8 meetings were attended (appendix 6.2 for details).

Over the period of the research, the hospital provided me with generous access to people and documentary evidence, both of these resources fulfilled my criteria in all the most crucial respects. I was able to operate as an independent researcher with complete ownership of the data I collected. In some instances I was asked to clear particular documentary material with Joe Howells before I might use it in my writing, but I was never asked to disguise the organisations identity in my subsequent writing. As my research progressed and the data began to shape my ideas, I used a combination of literature review and visits to additional informants in order to follow up on aspects of my findings. It was through this period that the focus of my research became increasingly clear

A number of preliminary meetings were held, as mentioned earlier. These were of central significance in the development of the research. Aspects of the environment started to stand out as recurring themes in the interviews held with people of different backgrounds at this stage. As my experience of the organisation increased I developed my research questions around the importance of the health reforms for the hospital. It became increasingly apparent to me how central, to the changes within the organisation, the accounting and information systems were. The networks which were built up throughout the organisation by the accounting systems, the spread of the inscriptions which were produced by the technology became a particular focus of my research.

I started to find my informants more and more inclined to talk about the effect the new systems were coming to play within their part of the organisation or the role which they had in the implementation of the new systems. Symbols and diagrams which I had first been exposed to in the Finance Director's office on my initial visit to the organisation began to re-appear as others sought to represent the hospital structure and systems to me. It increasingly became apparent that the new accounting and information systems which were associated with the reform process within this hospital formed a critical part of the changes which the organisation was undertaking. Consequently my research efforts became increasingly focussed on issues of the systems implementation, and of seeking to understand the relationships which were being established throughout the organisation as these systems were implemented.

Access was linked to a very general request to look at casemix developments and the CHEs clinical budgeting project. Initial interviewees were all people who had had an active part in the project to date. Of the first 20 interviews all but 3 involved relatively senior managers (10)

and very senior clinicians (5) within the hospital. The other 2 were with an external advisor from a local accounting firm who was a member of the steering committee for the clinical budgeting project and an audit and contract manager from the RHA. Not all were converts to the relevance of casemix information, indeed some of the clinical support services people had only a very limited knowledge of how the systems changes they were seeing would feed into the Transition casemix software. Over this period of four months I interviewed seventy percent of the internal members of the steering committee, which had the overseeing role for the clinical budgeting project. One steering committee meeting was attended and I attended three meetings of the coding committee.

I had been told at the first meeting of the importance of medical coding (for a fuller discussion see chapter 8). I was lucky enough to see Ron Shaw, the surgery division business manager, in late June, 1994 at which time I was invited to attend the next meeting of the coding committee. Ron chaired this committee and was very helpful in both inviting me, getting notice of the meetings to me and minutes and also giving me the opportunity to explain at the July meeting my presence at the meeting and my research interest in the organisation. My interest in coding was aroused at this early stage. The coding committee was working almost exclusively in the surgery division at this time, occasionally meetings were attended by nurse managers from the women and child division. Some of the clinicians who attended had responsibilities in both areas. The committee was made of clinicians, nurse managers from a number of surgery wards, the surgery division business manager (at this time Ron Shaw), surgery division accountant and some systems people as and when required. The systems people who attended most often were from the medical coding unit.

The other key interest I developed at this time was in the clinical support division. At this relatively early stage in the implementation of the casemix project this division was generally regarded within the casemix team as being the furthest advanced. This division includes laboratory services and the blood collection and processing centre. The TCB team member who had particular responsibility for developments here was Willem Sandberg. I had met Willem at my first visit to the hospital when he had been called to speak to with Stewart and I by Joe Howells. Willem's background was in financial appraisal, very much a backroom accounting type occupation.

Willem was very open to my interest in the design and implementation of accounting

techniques in these “feeder” areas. At this time in July/August, 1994 Willem had implemented costing systems in the biochemistry laboratory, and was working on systems for radiology and the blood centre. I was intrigued by the use of accounting techniques for product costing in these areas and arranged follow up interviews with Willem and with the managers of the biochemistry laboratory and the blood centre. Both of these were quite different products, range of product, magnitude of costs and were being treated very differently in terms of costing systems (see chapter 10 for detailed discussion of blood costing). Willem took great delight over a number of meetings, seven interviews all told, in “explaining” the costing systems he had been developing, to me. The design for these systems was invariably done off line by Willem, often using a spreadsheet. But implementation always would involve applying his model into the transition casemix reporting software package. Because of the often quite extraordinary programmed logic of this package this invariably made understanding the actual implementation problematic. This was very true of blood costing but can also be seen in what I have tried to explain of the use of relative value units within the transition system (see chapter 9, section 9.3.2). Willem explained that, having been delegated the task of producing product cost data for the clinical support areas, he had almost complete freedom to agree costing procedures and techniques with particular operational areas.

This impression was not limited to Willem’s area and led me to see change within HW as taking on an idiosyncratic character. What I saw were apparently complex processes relating to the organisation’s managers and other peoples’ actions as they sought to play a part in the implementation of the casemix system. It appeared to me that individuals made critical decisions about aspects of implementation eluding most attempts at coordination. Members of the casemix team made often major decisions about the adoption of accounting techniques without obvious recourse to others (aspects of this are described in the case chapters, see particularly chapter 10). But there were other examples where individual decisions about not to do certain things also appeared to be significant. As casemix responsibilities were delegated, individual team members made key decisions about whether to implement certain modules from the Transition software system. Such decisions contributed to the idiosyncrasy.

I do not mean to indicate here that there were no attempts at coordination. There certainly were but these would be sporadic and certainly over 12 of the 18 months covered by my visits to the hospital it became clear to me that the system was so complex that it was very difficult to accurately gauge progress. This tended to mean that individual members of the casemix team

appeared to have considerable freedom. They would need to demonstrate progress in one area of systems implementation or another. In surgery in particular medical coding (see discussion in chapter 8) was given high priority, less clear use appeared to be made of outputs from the casemix system. Toward the later stages of my site visits certain surgery wards were trying out management reports, providing actual against budget and variance analysis (see discussion in chapter 9), from the Transition casemix system. In the blood centre (see chapter 10) and biochemistry laboratory cost information was given prominence. In these areas of clinical support much earlier use was made of flexible budget reports from the casemix system, than was the case in surgery or medical.

Joe Howells had explained at an early meeting that a particular concern he had was with developing a formal implementation plan for the TCB project. This was at least 9 months following the establishment of the TCB team. Though eventually an implementation plan came to exist it formalised the existing projects more than it set plans for their implementation. In fact during the first six months of my involvement at the hospital the implementation plan was the most common topic of meeting and telephone calls between myself and Andy Reid. Andy held the responsibility for finalising this plan and I was involved over this period in writing up aspects of the project in which I been gathering information over different parts of the organisation. Some of my contribution to the overview documentation which described some detailed aspects of the project were referred to earlier and published in the NZ Accountants Journal (1995b). It was also at this time that I began to develop a sense of the complexity of the systems changes taking place at the hospital. The particular significance at HW of the Transition Casemix System. The centrality to the implementation process of some individuals and groups while others might be affected be remained relatively peripheral. I will relate this to some of Latour's sociology of translation later in this chapter and later and in more detail later in the thesis. The Transition software came to play a central and powerfully constitutive role in the Clinical Budgeting Project at HW.

Though in the above I am portraying as patchy the casemix implementation this is not meant to indicate any lack of influence of the system or the data and representations it provided. There is no doubt in my mind that the casemix system had considerable influence over a range of people at the hospital in a variety of functions, well beyond those directly involved in the system implementation. The finance function appeared influential in the developments and collected and represented much of the data in report format. It was finance and casemix team

people generally who acquired the expertise to get the system to work. These people were able to influence others in the organisation by the decisions they made. If Joe Howells wanted medical coding given priority staffing decisions were made. The coding committee was instructed toward different priorities (see discussion in chapter 8). Again I do not intend here to imply that Joe could call the shots and decree a result. But influence yes, clear outcomes no. In such complex areas as medical coding many things and people would need to come together to produce a result. Typically I would argue that the results were more often than not unpredictable and difficult to put down to a single person or objective cause.

4.2.2 How My Theoretical Ideas Developed

Particular ways of theorising the research were considered from quite an early stage. I wrote up aspects of the research using an institutional theory perspective and also from a critical theory, Foucauldian view. I had considered both of these lines of thinking in the first six months of the field research. But I remained unconvinced of the adequacy of the explanations to myself. Being unhappy with the explanations I was able to perceive in this way I continued to think about and read from other methodological perspectives over this period. I did not chance across Latour until Tony Lowe, who was one of my supervisors at that time, asked me one day in late November, 1994, if I had read anything of Callon and Latour. Tony gave me a particular reference to Latour's *Science in Action* (1987a). In fact though only mildly interested the reference lay at the back of my mind while I completed work on the papers from the two perspectives I mentioned earlier.

It was probably not till January, 1995 that I obtained a copy of *Science in Action*. Once I began to read I could not put the book down. This was the theorist for me. At this time I was aware of at least two articles in the accounting literature that had used aspects of Latour's thinking but that was a minor concern. I was convinced that Latour had some ideas I had to explore. I did not put me off in the least at the time that Latour's writing was apparently so far from accounting. I was convinced that there was application waiting for such far-reaching and challenging concepts. I began at this time to read around other work by Latour and to a lesser extent other writers in the sociology of science literature. At this stage I was unaware of the literature on so called actor network theory. It is noticeable that this is not a term which Latour favours. It is difficult to find in his writing prior to a conference keynote address Keele (1997b). This is in spite of the fact that Latour is credited along with Callon and to a lesser

extent John Law, as prime contributors to the development of ANT.

In theorising my research evidence the concepts developed by Callon, Latour and colleagues appeared increasingly appropriate. Callon and Latour's sociology of translation as developed in their 'empirical studies of science' seemed to contain a number of elements which were directly applicable in the developments at the hospital. Initially I relied on writings by others in accounting and information systems (Preston et al, 1993; Robson, 1991, 1992; Bloomfield et al, 1992). Later I became increasingly unhappy with the characterisation of Latour in the accounting literature particularly. Probably a year or fifteen months into the research I felt that in order to distinguish my contribution to the literature in my thesis I ought to be rather more accurate in my "translation" of Latour than other writers had been. This was not just a matter of being different for me, though I believe very strongly that my writing in the thesis is both a relevant and accurate portrayal of Latourian concepts of the social. I also would maintain that the concepts I have struggled to portray throughout my thesis are reflective of my own best efforts at sense making in the world.

At the same time as I was coming to terms with Latour. I was being surprised on continuing visits to the hospital at the way my interviews developed. I mentioned earlier the recurrence of different people insisting they explain things to me by the use of diagrams. This was not restricted to the figurative view of the clinical budgeting system which I referred to earlier. The systems division director, used a diagrammatic picture to show the options on medical coding in a coding committee meeting. A very senior medical specialist showed me how his interest in using casemix data for research purposes had resulted in his graphing the patient outcomes from certain medical procedures. Other people of differing backgrounds consistently wanted to explain what they did or how "their" systems worked by using tables, diagrams, computer printouts and in some cases pc software: from simple spreadsheets to a complex medical coding package called a "grouper".

Increasingly I came to view the events at the research site as being represented in terms of networks consisting of human actors and technology in the form of information systems. I came to see and became concerned to understand the systems which were being implemented as part of a complex network. The way in which I have sought to theorise my research using Latourian constructs is considered in more depth later in this chapter, see section 4.4. I see the applicability of Latour's ideas as confirming of and assisting in the explanation of the way my

research data was developing at the hospital. I was already being “encouraged” by my interviewees responses to concentrate on the technology and the power of graphical inscriptions. It is concepts such as these which are central to Latour’s conception of social change.

Accountants, medical coders, casemix analysts, clinicians, nurses and others health professionals were interviewed and indeed “followed around” in order to gain insight into the impact of the casemix and related system changes. I will return to Latour’s call for us to seek explanation by “following around” our informants (see discussion in section 4.4 and especially 4.4.1) but I will take an opportunity now to clarify what I feel this call means in my research.

This need to follow around our informants is a part of the postmodern turn. It is a research strategy which is based on an acceptance that we cannot, or at least, ought not to rely just on what our informants say. As a consequence I take seriously the need to follow. This does not mean just tagging along to see what people do. Most importantly is its appeal to us as researchers not to be easily led. Not to take so much for granted. But in addition to this in my research it means following what people do in their day to day actions. At the hospital, as in other organisations, such daily activities routinely bring people into contact with technology and information systems. Perhaps the major aim of my research is to give appropriate emphasis to these interactions. At the hospital many people are being and have been affected by the casemix system. In my research I am seeking to show why these effects are important. What makes the technology so attractive and embracing? Why do people take it as seriously as most of them do?

4.3 Latour's Rules of Method and Principles

Latour (1987a, p. 258) offers seven rules of method (see table 4.1) "for studying the fabrication² of scientific facts and technical artifacts" (1987, p. 21), along with six principles (see table 4.2) (Latour, 1987a, p. 259).

4.3.1 The Rules of Method

Latour builds up his explanations of these 'rules' throughout 'Science in Action'. The approach

used in this thesis to the mobilising of Latour within the context of systems change in a large public health provider has been useful in providing a framework from which to theorise research findings. Latour provides a range of theoretic categories through which the development and spread of ideas may be better understood. Though writers of 'empirical studies of science' have been applying the ideas of Callon and Latour for some time, it is only more recently that others have sought to apply the frameworks provided by these writers to the study of management information systems and the role of accounting within organisations (see for instance: Preston et al, 1993; Bloomfield et al, 1992)

The 'Rules of Method' which Latour expounds are a mix of philosophical approach to knowledge and exhortation of an acute scepticism. Latour seeks to convince us of the need to 'follow the traces' that are produced as 'networks' are built up. It is only by seeking to explain the way in which ideas have developed, how they have been made into more of a fact or less that, according to Latour we are able to understand how 'things come to be'. Latour effectively states and restates his interest in convincing us of the role of translation in the 'fact production' process and of the need to consider the role of non-human objects, such as: machines; information systems, accounting systems and so on in the construction of networks.

It is, Latour argues, these hybrid objects which are the strength behind the construction and spread of networks, which provide the means through which society is changed. Indeed, according to Latour, both nature and society are jointly produced out of the translation process. As networks are built, and ideas spread, issues are problematised and as the controversies are settled we are able to see nature in a different light as society is stabilised in new ways.

Table 4.1: Latour's Rules of Method

Rule 1	We study science in action and not ready made science or technology; to do so, we either arrive before the facts and machines are blackboxed or we follow the controversies that reopen them.
Rule 2	To determine the objectivity or subjectivity of a claim, the efficiency or perfection of a mechanism, we do not look for their intrinsic qualities but at all the transformations they undergo later in the hands of others.
Rule 3	Since the settlement of a controversy is the cause of Nature's representation, not its consequence, we can never use this consequence, Nature, to explain how and why a controversy has been settled.

Rule 4	Since the settlement of a controversy is the cause of Society's stability, we cannot use Society to explain how and why a controversy has been settled. We should consider symmetrically the efforts to enrol human and non-human resources.
Rule 5	We have to be as undecided as the various actors we follow as to what technoscience is made of; every time an inside/outside divide is built, we should study the two sides simultaneously and make the list, no matter how long and heterogeneous, of those who do the work.
Rule 6	Confronted with the accusation of irrationality, we look neither at what rule of logic has been broken, nor at what structure of society could explain the distortion, but to the angle and direction of the observer's displacement, and to the length of the network thus being built.
Rule 7	Before attributing any special quality to the mind or to the method of people, let us examine first the many ways through which inscriptions are gathered, combined, tied together and sent back. Only if there is something unexplained once the networks have been studied shall we start to speak of cognitive factors.

(Source: Latour, 1987a, p.258)

4.3.2 The Principles

Latour argues (1987a, p.17) that the 'principles' are open to debate to 'falsification', but the rules must be taken as a package "with them it is ... all or nothing. This is rather an extraordinary position since both the nature of the text 'Science in Action' and the nature of the methods and principles appears to make them very much interdependent, in some cases they appear to be mere restatements of the same thing. Latour also makes much of the necessity, in line with rule 2, to accept that 'the objectivity of any statement is a consequence of the transformations which it undergoes at the hands of others'. Since the 'fate of facts... is in the hands of later users' how can Latour be allowed to make a claim of his rules of method which he will not allow of others. In this respect Latour is perhaps attempting to 'enrol us' in a not so discrete manner. In Science in Action Latour does indeed present the rules as being a direct consequence of the principles. Perhaps then it might be more 'scientific' to treat both as questionable.

Table 4.2: Latour's Principles

Principle 1	The fate of facts and machines is in later users' hands; their qualities are thus a consequence, not a cause, of a collective action.
Principle 2	Scientists and engineers speak in the name of new allies that they have shaped and enrolled; representatives among other representatives, they add these unexpected resources to tip the balance of force in their favour.
Principle 3	We are never confronted with science, technology and society, but with a gamut of weaker and stronger associations; thus understanding what facts and machines are is the same task as understanding who the people are.
Principle 4	The more science and technology have an esoteric content the further they extend outside; thus, 'science and technology' is only a sub set of technoscience.
Principle 5	Irrationality is always an accusation made by someone building a network over someone else who stands in the way; thus, there is no Great Divide between minds, but only shorter and longer networks; harder facts are not the rule but the exception, since they are needed only in a very few cases to displace others on a large scale out of their usual ways.
Principle 6	History of technoscience is in a large part the history of the resources scattered along networks to accelerate the mobility, faithfulness, combination and cohesion of traces that make action at a distance possible.

(Source: Latour, 1987a, p.259)

Latour (1987a) indicates specific articulation between the principles expounded in table 4.2 and the rules of method which we discussed earlier (Table 4.1). These principles might be taken as an indication of Latour's theory of knowledge or epistemology, the philosophical underpinning of the rules of method and the sociology of translation. Since this thesis has used aspects of Latour's sociology of translation to provide an explanatory theory for the research data, the general thrust of his principles is also accepted. The principles effectively provide a skeletal methodological framework³ which provides the broad ideological boundaries within which the research methods have been applied. It is thought that the influence of this framework has not been overly restrictive of the research and that it is rather the rules of method which have most directly influenced the thoughts, interpretations and presentation of the research. Gouldner discusses the issue of theory choice in another field

... I found the usual discussions of "attitudes", "beliefs" and "values" [unable] to situate me in a theoretical tradition that lacked specific, substantive "middle-range" theories that could help ...
(Gouldner, 1976, p.65)

In this research, Latour's theories have been used to provide this "middle range" theorising.

4.4 Research Design

The sociology of translation is the term commonly used to describe the process through which Latour's methods are mobilised. It is primarily concepts drawn from Latour's translation process which have been used in explicating the development and change of accounting systems at HW over the last 3 years.

The translation process includes the definitions, interpretations and meanings that emerge from, and/or are deliberately and inadvertently shaped by, the actions and interactions of the participating individuals. The participants in my case research include the system designers, casemix analysts, business managers, clinicians and those others whose actions are influenced by the system. The emerging definitions, interpretations and meanings are seen to shape the way in which people think, talk and feel about the 'system' and condition their participation in, and/or response to, the design, implementation and operation of it. Individuals' interpretations and actions may reinforce or resist intended patterns of responsibility and accountability. In this respect the relationship is reciprocal, individual action may produce and reproduce organizational structures and in turn be conditioned and constrained by such structures (Giddens, 1984). The data that a budgetary control system records, the way one set of data is converted into new data through processes of aggregation and calculation, the manner by which the budgets are communicated and reported, and the uses and debates that it stimulates, can be seen to both set the agenda for (Cooper, 1981), and condition (Hopwood, 1973), managerial action.

Mechanisms of control and the manner in which a system is designed to operate becomes dependent on the actions and interactions of the participants, and the predictability of implementation is lost. As a consequence it is simplistic to assume that by simply assembling the components of a system, that the desired or intended outcome will be achieved. System design represents only part of the fabrication process. The process of translation also includes individuals' interpretations of, and responses to, the proposed or implemented system. As a result unintended actions and reactions are likely to play a significant role in shaping the system in a complex environment such as that involving sophisticated budgetary and accounting information systems.

The casemix system being implemented at HW was labelled as the 'Toward Clinical

Budgeting' (TCB) project. The TCB project was to be constructed around a central suite of software known as RUS (Resource Utilisation System) or more formally as Transition. The project was to involve a major re-implementation of a system which had been in use previously within the organisation, and also a number of developments had been identified in supporting or 'feeder' information systems. The opportunity provided by gaining access to the organisation at this early stage in the implementation process was to be extremely beneficial. The research was planned and suitable interviewees identified to take account of the emphasis which Latour places on rhetoric.

4.4.1 Applying Latour's Rules of Method

In approaching the research at HW, I sought to apply the investigative framework which was introduced in the preceding section. The research site provided an opportunity to the researcher to "arrive before the 'facts and machines are black boxed' and to 'follow the controversies' [Rule 1]. This is similar to the position noted by Preston et al (1993) in their study of changes, at the regional level. At HW 'facts' were being fabricated to enable a detailed 'casemix' analysis of the services the hospital provided to inpatients.

The research design at HW developed as understanding of the intricacies of the relationships unfolded. As different parts of the system came to be seen in context of other developments and plans, the nature and direction of the research altered. Opportunities to extend the research to consider the impact of medical coding on the role and structure of the casemix system are an example. The researcher took steps to ensure that such aspects could, where possible, be brought into the research project. Rules 4 and 5, 'we have to be as undecided as the various actors we follow as to what technoscience is made of' [Rule 5], have implications for the role of non-human as well as human actors within the process of change which will be discussed subsequently [see discussion of Rule 4 following].

Rules 3 and 4 are essentially philosophical arguments which seek to establish the credibility of particularly Rule 1. In the light of Rule 2 it might be argued that Rule 3 is simply an explanation of why we must seek to explain how 'facts' become accepted as such, without recourse to 'the nature of things'. This is widely accepted in much of the social sciences. Consequently it could be argued that Rule 2 in its emphasis on the social construction of

meaning has been widely accepted by other writers on society and organisations.

Rules 2 and 3 make it essential to 'follow actors around' the organisation so that their contribution to the system implementation might be understood. Interviews were held with accountants and casemix personnel, to establish their interpretation of what they were seeking to achieve. But in addition meetings were attended, both involving internal speakers and outsiders, a number of whom were invited to speak to staff at the hospital. It was particularly during such events as these that the ability of spokespersons and the mobilisation of information technology could be seen to influence other staff less directly involved in the TCB project. The involvement of invited 'spokespersons' was illustrative of the 'enrolment of allies' in the process of 'convincing'. Some of these speakers were from overseas, some were from the Transition organisation based in the US. These spokespersons were able to present the system features in the best possible light. Their presentations often involved the use of technology to present convincing 'facts' about casemix information. Often these presentations involved the use of fictitious 'inscriptions' of clinical and or financial data, which provided added strength to the presenters arguments.

Latour seeks in rule 4 to reinforce an argument which he makes for symmetry in understanding the contribution of the natural, or real objects, and the social to the process through which controversies are settled. More directly of relevance to the attitudes taken within this research is the emphasis given to 'efforts to enrol human and non-human resources' (Rule 4). Rule 5 also refers to 'what technoscience is made of'. This is another reference to the significance of machines and technology in effecting the process of change. In the research at HW particular emphasis was given to understanding the accounting and information systems. This involved becoming familiar with their structure and particularly the way in which the systems manipulated data. The researcher spent considerable time in seeking to understand the 'inscriptions' which were provided from these systems to human actors and to other information systems. In a number of instances spreadsheet models were built in order to capture the 'translations' which were being carried out within the accounting and casemix systems.

Elsewhere Latour (1993) makes very strong arguments in respect of how human and non-human actors must be treated symmetrically in explaining how changes in technoscience come about 'understanding what facts and machines are is the same task as understanding who the

people are' [Principle 4]. Latour justifies his arguments, in what might be seen as the privileging of technology, by suggesting that there has been an aversity among theorists to combine human and non-human actors in explaining the development of society and of knowledge. Latour recognises that his approach is in conflict with both a, conventional, modernist and post modernist theory of knowledge. On the contrary Latour argues that our society has become as it is because of this establishment of 'collectives' of humans and non-humans, of the social and objects or machines.

It seeking a term to encapsulate the joint effects of human and non-human actors in the construction of society and nature Latour describes these associations as 'networks' [Rules 6 and 7 both make reference to this term]. 'Before attributing any special quality to the mind or to the method of people, let us examine first the many ways through which inscriptions are gathered, combined, tied together and sent back' [Rule 7].

Actor networks is perhaps the phrase with which Latour's work is most often described (see Clegg, 1989). Once again this concept of establishing the 'length [and nature] of the network thus being built' was central to the research activity at HW. Clearly this idea is related to some of the issues already discussed. But 'tracing' the 'networks' is perhaps the single most appropriate way of summarising the approach taken to the research activity both at the hospital and in the health sector. This gave rise to the concerns of the researcher to take appropriate account of the environment in which changes within the health provider were taking place. Issues relating to the health reform process at a national level are discussed in chapter 6. It was necessary in order to appropriately trace the networks which were complicit in effecting the health reforms, and effecting the impetus of change within the hospital, to follow events in the health environment. Only in this manner might an appropriate understanding of change within the research site be made possible.

4.4.2 Accounting and the Production of Facts

At the hospital technical systems have played and been made to play a pivotal role as, particularly, managers within the organisation have sought to respond to the reform process. Accounting systems have been called upon to inscribe "facts", and at other times to act as arbiters of the truth, as convincing spokesperson. Other "black boxes" have been brought in

to the process of enrolling, mobilising and convincing others. These hybrids, a mixture of technology and human invention, are both the subject of the human spokesperson and the objects which provide the convincing of other humans. These systems place constraints on people while at the same time acting as their allies. The accounting system fabricates the "facts" in accordance with internal logic and by combining and recombining masses of inscriptions on top of other inscriptions. The logic of these systems cannot be adequately explained or challenged without reopening long closed "black boxes". In most instances at the hospital such challenges would be difficult for people to mount.

The great masses of Nature and Society can be compared to the cooled-down continents of plate tectonics. If we want to understand their movement, we have to go down into those searing rifts where the magma erupts and on the basis of this eruption are produced - much later and much farther off, by cooling and progressive stacking - the two continental plates on which our feet are firmly planted. Like the geophysicians, **we too have to go down and approach the places where the mixtures are made that will become - but only much later- aspects of Nature or of the Social. Is it too much to ask of our discussions that from now on we should spell out the latitude of the entities we are talking about as well as their longitude, and that we should view essences as events and trajectories?** (Latour, 1993, p.87)

The above passage at once simplifies and seeks to explain all that Latour seeks to achieve. The crucial argument that the essence of a "fact" cannot be securely ascertained by observation and analysis in the present. The inherent mixing of nature and society, such that we may not apprehend our "facts" in the present without examining their past, the manner in which an object of science or a piece of technology became recognised as such.

The mixtures of social and natural "collectives" mobilised in producing the final object we perceive are concepts which are of applicability to accounting and organisational research. In the case of an accounting or information system, there is a simple parallel. The researcher faced with an organisation might take an existing accounting system as a given and proceed to carry out research on the social interactions which are taking place within the organisation. This research might provide valuable insights on the role of accounting in wider organisational contexts, but what if we discover by examining more closely the history of the development of the organisation and the accounting system, that the existing social structures and the behaviour of the human actants is bound up in the development of the system itself. We can perceive events and processes which have led to, not only the essence of the system being effected by human actors, but the behaviour of the human actors having been conditioned in part by the acting and reacting with the technology. In this process it becomes necessary to identify the networks which allow technology to develop and at the same time constrain its

application.

On entering the research site it seemed to this researcher that the obvious way in which to obtain knowledge of the casemix project was by seeking out the links within the hospital organisation which were impacted upon by the casemix project. In following such a strategy it became apparent that to understand the events which were taking shape in the different parts of the organisation it was going to be important to establish, at least in part, the network of relationships which constituted casemix.

In attempting to clarify the links and determine, in Latour's terms which were stronger and which weaker, it began to become clear how important a role was being played by the technology, by the non-human actors. Consequently I found myself increasingly drawn to the need to gain an understanding of the accountings and other information systems being implemented across the organisation. It was only through this appreciation of the significance and strength of the role played by these quasi-objects that it became possible for this researcher to provide an explication of the effects of these changes within the hospital. It is these collectives and networks which are formed by combining human and non-human actors which enable technoscience, and society, to develop.

4.4.3 Tracing the Networks at HW

In the analysis undertaken at HW, the primary piece of management technology which is still currently undergoing implementation is the casemix or clinical budgeting system. The choice of name for the budgeting system is of itself indicative of a rather more astute approach to the need to bring medical professionals and particularly clinicians onside. Latour's rules of method have been used to guide the research activity and particularly the theorising of the outcomes of the research process.

The transformation of the existing accounting systems and the construction of the clinical budgeting system from a set of possibilities to an "accepted" piece of managerial technology is examined through examination of the engagement of staff in "building prototypes" within the accounting system. At the local level the research included observation of the "Toward Clinical Budgeting" Steering Group, sub group meetings and examination of minutes and other

documentary records. National developments which convince people of the government's seriousness in reorganising the public sector in general and controlling costs also impact on the reception of new systems. More specifically changes in the structure of and funding of the Health Sector have been tactically important in increasing the "realism" of health service professionals. Later chapters (see chapters 7 through 10) seek to illustrate how the process of "closing" the technology operated at the research site.

... attempts to develop convincing arguments ... to make it a system that is used, to make it a "natural" part of the organisations' functioning. (Preston et al, 1992, p.568)

There are a number of similarities between Latour's technoscience and the developments in system implementation at the hospital. The ability of technology to spread and become an accepted part of society is characterised by Latour as being dependent in part on the ability of the innovator to mobilise resources. This may be translated in terms of the necessity of laboratories and machines to produce scientific research or of bureaucracy to provide representations, or inscriptions of the economy. Only those who are able to enrol such allies are able to enrol others.

We may see the transition software and the clinical budgeting system as, the equivalent, at the hospital, of the machines and technology of which Latour speaks in "technoscience". Latour intends that we should acknowledge the significance of these "quasi-objects", in studying and seeking explanation of why things are as they are. A balance must be struck between the attention that is given to social interaction and behaviour (what we might call people's interests) and the part played by machines and systems to effect and channel the social.

In the field research conducted at HW this balance was achieved by paying particular attention to the understanding and explication of the non-human elements of the 'networks' which constituted the 'clinical budgeting' project. Considerable time was spent in examining the documentation of and reports of the various accounting and other information systems which constituted the clinical budgeting system.

Accountants, medical coders, casemix analysts and others were interviewed and indeed followed around in order to see the impact of the systems which their activities contributed to. Accounting reporting systems were examined in detail and in some cases spreadsheets were built in order that the calculations could be thoroughly understood. This activity enabled the

researcher to open up some of the black boxes which had been constructed in the course of the implementation of the clinical budgeting system. Only by following such an approach could the nature of the systems be understood. In this manner it was hoped that the research process could avoid the problems which might result from an approach based only on an analysis of the interests and expressions of the human actors. Such interpretations as may be gained from even a truly reflexive interview based methodology, would still be liable to fail to detect the different image placed on events after 'controversies are settled'. Once facts become established, Latour argues, they have played their part in effecting the way we see nature and culture, or society. As a consequence Latour argues that we can only understand, more fully, how events have been shaped and problems solved, by careful attention to understanding and explicating the underlying processes which have given rise to such solutions. Actors must be followed, networks must be 'traced', so that we can elicit the complex interrelations which have combined to produce the consequences which emerge.

As part of the process of Health Reform very considerable resources have been made available and expended at the local level to provide "more accurate" and "useful" management information, via increasingly detailed inscriptions of clinical processes. These developments have relied on the successful building of intricate networks, and the ability to form alliances with others. But at the same time these networks and alliances place constraints and limits on technoscience and its systems (Latour, 1987a, p.67). We are continually reminded by Latour of the dependence of technoscience upon its networks of relationships, the significance of the centres of calculation, of enormous volumes of mundane inscriptions and of the importance of the enrolment of people into the technoscience project. Without enormous resource and effort ideas do not travel, prototypes do not become commonplace and knowledge does not produce centres of calculation which become 'obligatory points of passage'. It is only after all these resources: the computer software; the accountants; the IT people; the computers, have been successfully brought to bear that controversies are settled and 'black boxes' are produced.

Latour imbues the networks within which technoscience and knowledge are created with great significance. They provide the vehicle which enables the accumulation of knowledge but perhaps even more significantly the constraints within which the developments struggle to be expressed and become accepted/meaningful. Facts are given their meaning by being associated with other facts within a specialised, protected and protective environment. As development continues and some ideas and machines become stronger than others they cease to be

questioned and the subject of fierce debates, but are accepted within a specialism and later perhaps by others outside of the centres. At this point ideas are transformed into facts and black boxes.

Every time a fact is verified and a machine runs, it means that the lab or shop conditions have been extended in some way ... Forgetting the extension of the instruments when admiring the smooth running of facts and machines would be like admiring the road system, with all those fast trucks and cars, and overlooking civil engineering, the garages, the mechanics and the spare parts. Facts and machines have no inertia of their own ...; like kings or armies they cannot travel without their retinues or impedimenta. (Latour, 1987a, p.250)

The attraction of Callon and Latour's concept of translation to accounting seems apparent, already many would accept that accounting is employed with some intention of representation. Accounting techniques depend upon procedures of measurement, classification and recording that can be applied to activities. In general accounting is often depicted as concerned with the quantifiable. Problems of the "partial" nature of accounting representation are now well known. Events that are not easily rendered into financial quantities tend to be overlooked, or bracketed as "qualitative" issues. This suggests that the conventional understanding of accounting as a technical process of neutral representation is somewhat limited. Accounting has multiple and even conflicting roles.

4.5 Concluding Comments

The research design consisted of a field study of an organisation in which the research task consists of uncovering the "traces" left by networks, in order that the networks may be explicated. The methods used in this endeavour include observation, interview, review of documents, all with a longitudinal emphasis. The cases are constructed with a view to representing the process through which systems are developed and information is inscribed and becomes accepted as fact. Visits to the hospital have covered a period of over eighteen months and documents have been examined covering a rather longer period. Each case constructed in this manner is specific to the particular research project, and is clearly in Latour's terms to be regarded as an empirical study. The detailed stories of change at the hospital are presented in the latter third of the thesis in chapters 7 through 10.

In tracing the networks which are representative of the spread of technology through the hospital, the emphasis has been on the interactions among human and non-human actors. The

research has sought to discover the effect of the adoption of systems of accounting and related technology on the organisation. How these networks of alliances of humans and technology, act within different areas of the hospital to strengthen, or not, the aims of the health reformers. Within the hospital these individuals have come to be represented by the casemix team.

The emphasis in the next two chapters is rather different. Chapters 5 and 6 provide an extensive discussion of recent and in some cases, particularly in chapter 5, not so recent policy change in NZ. The sociology of translation will be used to explain the processes which underlie the changes and will be used to capture effects such as the role of Treasury and other institutional "allies" in the production of government policy especially after 1984. Chapter 6 will describe the changes in New Zealand health sector policy and structure. These changes are explicated using the concepts of problematisation, inscription and the construction of networks (Callon (1986) and Latour (1987a, 1993)

Notes

1. This approach has something in common with Laughlin's 'Middle Range Thinking' (1995). Laughlin makes an argument in support of the benefits of not over theorising in empirical research before entering the field.
2. Though Latour does use the term fabrication he adopts the phrase 'sociology of translation' to denote these processes of change more generally. In the remainder of the thesis Latour's terminology will be used.
3. Adopting the classification scheme which Laughlin (1995) uses it is felt appropriate to designate Latour's principles as providing a medium level of prior theorisation. Laughlin's framework may be subject to some criticism for its rather arbitrary and 'convenient' classification schema. As for Latour it can reasonably be suggested that the 'Rules' he outlines are more a way of thinking than they are constitutive of a rigid theoretical framework.

Chapter 5: New Zealand Government Policy Post 1984: An Exercise in Problematisation

In fighting for his ideas (or "principles"), the ideologue now experiences himself as engaged in a new, purified kind of politics. He understands and presents himself as not just engaged in politics for the old, selfish reason - to further his own interests or to advance himself "materially." Ideological politics now claims to be a historically new and higher form of politics; a kind of selfless work. It thereby authorizes itself to make the highest claims upon its adherents. It obliges them to pursue their goals with zealous determination, while authorising them to inflict the severest penalties on those opposing such goals. (Gouldner, 1976, p.29)

5.1 Introduction

This chapter will discuss what appear to be the central features of the process of policy change over the period, particularly the 80s and early 90s. The discussion will identify the underlying influences which have been identified as motivating the policy adjustments, some of which have been of an extreme nature. These factors and events will be theorised following Callon (1986) and Latour (1987a). This will involve applying a framework of interpretation based on the concepts of Latour's sociology of translation.

Material on problematisation, the state, and government will be incorporated into the chapter in order to provide an explanatory frame of reference which will enable sense to be made of the process of change in the political economy in New Zealand. The sociology of translation will be used to explain the processes which underlie the changes and will be used to capture effects such as the role of Treasury and "allies" in the production of government policy especially after 1984. Treasury came to occupy a position of very great influence, in effect, it achieved the status of an obligatory passage point (Latour, 1987a). All major government policy initiatives either originated from within Treasury or increasingly after 1984 had to be approved by Treasury (Boston and Cooper, 1989).

A number of elements may be discerned within the New Zealand discourse on the economic

policy prescriptions of the last two decades. Borrowing from Latour's sociology of translation we are able to recognise elements of the processes by which allies are enrolled in support of particular objectives, and the manner in which arguments are built up by the enlisting of more and more support both from literature and other tactics. Support was drawn from the literature by using internationally recognised experts to support, for example, monetary policies. Other tactics include the setting up of influential research functions (laboratories) within the responsibility of the Treasury especially and more recently the Reserve Bank (see discussion in sections 5.6 and 5.5 respectively). This activity proved difficult to counter given the level of funding afforded to these activities during the 1980s.

5.2 Problematisation of the Role of the State in NZ

Latour (1987a) in his sociology of translation identifies the importance of networks of alliances in the processes of "fact formation". The particular roles played by "centres of calculation" or "obligatory passage points" are crucial to the effectiveness and the direction of change. Issues enter the public realm for attention and perhaps resolution through a complex of forces, which are to a greater or lesser degree unpredictable. Alliances are formed and dissipated as particular matters are problematised as a result of the interactions of different groups within society.

Government is a *problematizing* activity: it poses the obligations of rulers in terms of the problems they seek to address. The ideals of government are intrinsically linked to the problems around which it circulates, the failings it seeks to rectify, the ills it seeks to cure. Indeed, the history of government might well be written as a history of problematizations, in which politicians, intellectuals, philosophers, medics, military men, feminists and philanthropists have measured the real against the ideal and found it wanting. (Rose and Miller, 1992, p.181)

Callon (1986) and Latour (1987a) in developing their sociology of translation describe a central part of the process as that concerning the manner in which subjects become identified for treatment, how problems become recognised as such. At the macro level such concerns involve an assimilation of what constitutes 'political power', 'the state', and 'governing at a distance'.

Political power, in this approach, is not a property or possession of 'rulers'. Power no longer resides at headquarters; in response to a call from Foucault (1978, p.88/9), the king has lost his head. Power now inheres in the complex and delicate networks which authorities establish and through which they induce individuals and groups to align their comportment and objectives with those of authorities themselves. Political power in consequence is 'beyond the state'. (Curtis, 1995, p.576)

In order to understand the environment which has led to the restructuring of the New Zealand public sector and trends in government policy it is necessary to examine the rhetoric which underlay the changes. Some commentators have suggested that the responsibility of the State for social policies is under threat from the economic policy prescriptions of the new right in New Zealand (Boston, 1990, 1992, Easton, 1989a, 1989b, 1990a, 1990b, Roper, 1991a, 1991b). Much of the dramatic restructuring that New Zealand has undergone in the last 10 years has been inspired by the economic policies and ideology of the new right. A supporter observed of the early days of Rogernomics¹.

It's generally accepted that we in New Zealand are going through a period of revolution, in the sense that the old order is being replaced with a new order which has not just an infrastructure, but more importantly an ideology, beliefs and value system. ("a supporter" quoted in Legat, 1991, p.63)

Most observers agree (Easton, 1980; Franklin, 1978, 1985; Gould, 1982, 1984, 1985; Hawke, 1985; Jesson, 1987, 1989; Shirley et al., 1990; Wilkes, 1988a, 1988b) that the decline in the terms of trade was the crucial factor in explaining the decline in the New Zealand economy (See Roper, 1991, 1993 for a different interpretation). In spite of this general agreement on the cause Monetarists and Keynesians disagree fundamentally on their interpretation of events since 1973.

Essentially, monetarists have argued that the Keynesian policies of the first period were disastrous and that the monetarist policies of the second period did not work as well as they should have because they were insufficiently monetarist (for example, insufficient attempts to increase the flexibility of the labour market, failure to reduce the fiscal deficit through cuts in social spending, and so forth). Keynesians, by contrast, have argued that the monetarist policies of the second period were disastrous and that the Keynesian policies of the Muldoon Government did not work as well as they should have because they were insufficiently Keynesian (Roper, 1993, p.5)

The way in which issues are problematised and debates are conducted is central to the arguments used by Latour (1987a) to explain the processes through which "facts" become accepted within society. Though there were "detractors" who argued in opposition to the prescribed government policy prescriptions in New Zealand during the late 80s and early 90s, the opposition was not effective. This may be the result of a combination of factors including the lack of constitutional checks in the NZ governmental system, which provide little formal opportunity to mobilise opposition, or the effectiveness of government and its allies to problematise and translate key issues into policy actions. A number of elements may be discerned within the New Zealand discourse on the economic policy prescriptions of the last two decades. Borrowing from Latour's sociology of translation it is possible to recognise elements of the processes by which allies are enrolled in support of particular objectives and

the manner in which arguments are built up by the enlisting of more and more support both from literature and 'expert' spokespersons, eg. the use of internationally recognised experts to support, for example, monetary policy. Other devices include the setting up of research functions (laboratories) within the responsibility of the Treasury especially and more recently the Reserve Bank. This activity proved difficult to counter given the level of funding afforded to these organisations during the 1980s (Boston and Cooper, 1989).

There have been a number of contributions to the analysis and interpretation of developments in New Zealand economic policy over recent times. Some commentators have welcomed the structural changes to the previously extensive state sector, while others have worried about the determination of policy direction and the impact on the social fabric of modern New Zealand (Boston, 1990, 1992; Easton, 1989a, 1989b, 1990a, 1990b; Kelsey, 1993, 1995; Roper, 1991a, 1991b). Particular concerns have been expressed over the lack of debate on policy choice and the capture of policy influence by a very limited and close knit set of groups. Treasury has been identified as being a central influence in both supplying the government with advice on policy options and also in the implementation process (Roper, 1993).

Rose and Miller (1992) argue that the characteristic mode of government in modern liberal democratic societies, is 'government at a distance' (see Curtis, 1995, for a critique). Rose and Miller argue that conventional accounts of state and politics are flawed because of undue:

... focus upon the internal organization of the political apparatus and the legitimating discourses of philosophy and jurisprudence, **and their marginalisation of the active part played by expertise from accountancy to psychiatry in the ways in which programmes and strategies of government have been invented, operationalized and territorialized in diverse spaces and locales...** [Miller and Rose (1992) sought] ... to emphasize the conditions and implications of the ways in which, from the eighteenth century onwards, government has become dependent upon the truths provided by the positive knowledges of the human, social, and economic world, and those who profess them. (Miller and Rose, 1995, p.582, emphasis added)

Rose and Miller(1995) argue that their contribution to the literature (1992) and others constitutes a 'research programme'. Rose and Miller cite other writers in areas such as political philosophy (Tully 1989; Hindess 1996) and social history (Joyce 1994) and more broadly (Hacking 1990, 1991; Porter 1986, 1992, 1995; Meyer 1986). This author intends to follow the interpretation of Miller and Rose in this thesis in order to provide additions to direct interpretations of the theories of Latour in relation to the activities of government.

5.3 The End of the Long Boom: Economic Crisis or Problematisation

Gould aptly refers to 'the end of the golden weather' in his account of New Zealand's post-war economic history (1982, p. 113). Indeed, the balmy days of economic prosperity and political stability have been succeeded by stormy turbulence--that is to say, by prolonged economic stagnation, wild swings in the popularity of the major political parties, and fundamental changes in the direction of economic and social policy formulation.

The 1973-74 oil shock and the collapse of the commodity price boom of the early 1970s, had a dramatic impact on New Zealand's terms of trade (import prices rose relative to export prices) (Gould, 1982, pp. 126-32). Almost simultaneously New Zealand was affected by the commencement of the British entry into the EEC in 1973. New Zealand's access to the British market, which had been virtually guaranteed in the post war years particularly, became increasingly limited (Dalziel and Clydesdale, 1991, pp. 13-16; Hawke, 1985, p. 209). Some observers suggest that the decline in economic performance from 1974 to 1984 was almost entirely due to the decline in the terms of trade (Shirley et al., 1990, pp. 27-33).

New Zealand has traditionally been dependent on a narrow range of exports, almost entirely agricultural, to provide a balance of payments situation which would enable the import of intermediate inputs for the manufacturing sector, oil and capital equipment (Gould, 1982 and 1985; Hawke, 1985, ch.11).

....there are very few countries, certainly among the high income economies, which have suffered a combination of the effect of the oil shock plus a chronically weakening market situation for major traditional exports in eight of the nine years between 1975 and 1983 inclusive the terms of trade were at a lower level than in any year from 1950 to 1974, and the average for 1975 to 1983 was more than 23 per cent below the average for 1950 to 1974 (Gould, 1985, p.43)

From 1945 to 1966 New Zealand's terms of trade fluctuated around an historically high level. While the terms of trade fell dramatically late in 1966, this fall, which continued unabated until 1970, was offset by a strong recovery from December 1971 to October 1973 in the context of a world commodity boom (see Department of Statistics, 1992, pp. 407-8).

A decline in the terms of trade of sufficient magnitude will generate a current account deficit and deflate the domestic economy by lowering aggregate demand (consumption, investment, government purchases of goods and services, and net exports). The government can respond

either by borrowing to offset the deficit or it can allow the economy to deflate with adverse consequences for output growth and employment. In light of this, it is hardly surprising that most explanatory accounts of New Zealand's economic crisis, and government responses to it, have placed a great deal of weight on the negative impact of the decline in the terms of trade on the New Zealand economy.

Because the terms of trade reflect the specific configuration of New Zealand's integration into the world economy, the historically low level of the terms of trade in the 1970s and 1980s has led many to investigate the nature of New Zealand's relationship to the world economy². In this vein, Easton (1980), Franklin (1978, 1985), Gould (1982, 1984, 1985), Hawke (1985), Jesson (1987, 1989), Shirley et al. (1990) and Wilkes (1988a, 1988b), all place the emphasis on some aspect or other of this relationship in their explanations of the economic crisis.

5.4 Mobilising Texts: "Arguing from Authority"

In the process of problematisation Latour (1987a) recognises the power of texts to produce facts and act as allies in the process of problematising issues. It becomes essential for interested parties to enrol support in terms of both other groups but also other objects, in the form of the text or perhaps technology, such as scientific equipment or other physical resources. All of these things may legitimately constitute allies, and in that sense Latour does not wish us to distinguish one from the other (refer to chapter 4 for discussion of Latour's Rules of Method (1987a, p.258)). Rule 4 deals with 'efforts to enrol human and non-human resources' while Rule 5 refers to 'what technoscience is made of'. These concepts have both been taken seriously in guiding the interpretations of this research.

What is behind the claims? Texts. And behind the texts? More texts, becoming more and more technical because they bring in more and more papers. Behind these articles? Graphs, inscriptions, labels, tables, maps, arrayed in tiers. Behind these inscriptions? Instruments, whatever their shape, age and cost that end up scribbling, registering and jotting down various traces. Behind the instruments? Mouthpieces of all sorts and manners commenting on the graphs and 'simply' saying what they mean. Behind them? Arrays of instruments. Behind those? Trials of strength to evaluate the resistance of the ties that link the representatives to what they speak for. It is not only words that are now lined up to confront the dissenter, not only graphs to support the words and references to support the whole assembly of allies, not only instruments to generate endless numbers of newer and clearer inscriptions, but, behind the instruments, new objects are lined up which are defined by their resistance to trials. (Latour, 1987a, p.79)

Latour suggests that support is increasingly drawn from the literature as "controversies flare

up" (Latour, 1987a, p.31). He further argues that there is a tendency for the literature to become more and more "technical" in order to "withstand the assaults of a hostile environment" (ibid, p.45). Policy makers and advisers made increasing reference to the literature of neoliberal economic theory during the eighties. This was to be followed by the inviting of a number of prominent right wing academics, particularly from North America, to speak to New Zealand audiences. The New Zealand Business Roundtable (NZBR) was particularly active in this role. In other cases research and consultancy projects involving such people were funded by the New Zealand government or in some cases by right wing business organisations such as the NZBR.

Government has consistently argued that circumstances were such that there was no alternative. But there are always alternative policies. In effect the actions of the New Zealand government and its close allies within the business community managed, through a series of sophisticated and well managed contributions, to problematise key issues such as the critical state of the economy and the role of government in the public sector. Others groups were enrolled as the process expanded its influence throughout New Zealand society. It became very widely accepted that the economic problems which faced the country were so severe that people were discouraged from voicing dissent and advocating alternative policies.

The power of the problematisations and the enrolment process were such that both major political parties had by the mid 1980s adopted the policy prescriptions of the New Right. Indeed it was a Labour government that first applied such policies, in a relatively pure form to the New Zealand economy, to reverse the interventionist and protectionist policies of the previous administration. Though some observers have questioned the seriousness of the situation painted by successive government ministers this has had little impact on public opinion and certainly not led to any significant opposition to the policy changes.

... there was no crisis, just manageable problems (Pierson, 1991, p. 164).

The problematisation has been entirely effective, allies have been enrolled and inscriptions have been used effectively to convince others of the "facts" about the economy and later the "facts" about the inefficiency of a conventional public sector.

It has been argued that there are serious implications for the democratic process of the ability

of groups to influence the policy making process and exert control over the executive. On the other hand we are, in witnessing this process, seeing the modern state "in action". The construction of the "governable person" and certainly evidence of the "new economic citizenship" (Miller and O'Leary, 1987 and Rose and Miller, 1992). Rose and Miller (1992) provided an interpretation of a macro problematisation complete with centres of calculation, inscriptions and the rest. I see this as being very much influenced by Latour's constructs but others may interpret more from a Foucauldian perspective.

What do Rose and Miller mean by "Beyond the State". Though here I depict, to some extent, "the traditional actors of political science (state institutions, political parties, interest groups and professionals) struggling to mobilise their 'interests'" (Curtis, 1995), this is only a part of the story I wish to relate. Rose and Miller (1992; Miller and Rose, 1995) are at pains to eschew conventional analysis, however difficult this may be (Curtis, 1995). In their conceptualization, political power emerges from the multiplicity of technologies of rule in a range of forms in the diverse locales which are constituted as the domains of liberal government. Differing interpretations of Rose and Miller's project are possible. Some would appear to see these authors as excluding traditional structures of government and particularly traditional political actors from their analysis. I feel that Rose and Miller are much more concerned with process than with structures or institutions. It is from this perspective that I have applied their theorising to Treasury, in particular. I do not portray Treasury as delegated its power from a central authority. Or at least not primarily. What I intend is to emphasise the processual nature through which power is accumulated at the centre. The building of networks, the accumulation of knowledge, the use of allies, both in the form of economics texts and others allies of "experts" within the NZ business and political culture. Miller and Rose respond in the following manner to Curtis (1995)

One aim of our article was to argue that a weakness of conventional accounts of state and politics was their focus upon the internal organization of the political apparatus and the legitimating discourses of philosophy and jurisprudence, and their marginalisation of the active part played by expertise from accountancy to psychiatry in the ways in which programmes and strategies of government have been invented, operationalized and territorialized in diverse spaces and locales. (Miller and Rose, 1995, p.582)

I would accept that another interpretation of Rose and Miller may be plausible, indeed cogent. But I see this line of discourse as indicating a desire to not only extend the analysis, but also rather to eschew any conventional boundaries. It is in this respect, or in rejecting this that I have sought to not distinguish between an arm of the state (since post Rose and Miller this is

no longer central), and other collectivities. Miller and Rose continue:

...we do not deny the existence of 'states' understood as political apparatuses and their associated devices and techniques of rule." Our point was, rather, that one is under no obligation to account for such assemblages in the philosophical and constitutional language of the nineteenth century, still less to underpin this misleading account with a theoretical infrastructure derived from nineteenth century social and political theory which accords 'the state' a quite illusory necessity, functionality and territorialization. But the aim of this distinction was to direct attention to the heterogeneous intellectual and technical conditions for the historically specific assemblages that link aspirations of rulers with the conduct of the ruled through authorities as diverse as bureaucrats, lawyers, parents, accountants, managers, and teachers. (Miller and Rose, 1995, p594)

Rose and Miller (1992) place great emphasis on the pivotal role played by expertise (or knowledge) in the governmental endeavour.

Liberal mentalities of government [faced a problem in explicating the processes of state regulation, and] ... Expertise emerged as a possible solution' to this problem, indeed became, somehow, solution, and so 'the vital links between socio-political objectives and the minutiae of daily existence... were to be established by expertise' (Rose and Miller, 1992, p.188).

This instance of the problematising process, is indicative of a general trend identified in the writings of not only Callon and Latour, but also Foucault (1973, 1977, 1984, 1991). Latour and Callon provide a 'sociology of translation' and of enrolment which constitutes a framework for analysing the activities of government within a network of alliances and consisting of the independent and yet calculable actions of many unrelated agencies and temporal strategic alliances.

The following section will discuss aspects of the influence of the executive, and especially the Reserve Bank and Treasury on the policy making process. In this section we will also be concerned to show the impact on policy determination over time of the nature of problematizations over time. The position of both Treasury and the Reserve Bank will also be shown to be as "centres of calculation" and "obligatory passage points" within the powerful networks of the state and public governance.

5.5 Problematisation of Economic Policy and the Reserve Bank

This section will relate briefly some of the events and effects which have influenced the position and nature of the Reserve Bank in New Zealand. Since the Reserve Bank was created in 1932 its role in the state mechanisms and its contribution to economic policy have been

influenced significantly by the prevailing problems of the time, their interpretation and problematization. Though other factors, such as the relative power of Treasury, may also have had an influence at times, we will concentrate on the way in which the role of the Reserve Bank was changed to reflect the changes in the economic and political environment and its problematisation. Rose and Miller refer to "Government [as] a *problematizing* activity..." (1992, p.181) and that "Indeed, the history of government might well be written as a history of problematizations".

The key role of problematisation is in the selective manner in which economic data are presented. Unemployment does not become less of a worry, but it is portrayed as more or less central to economic policy. Keynesians do not suddenly change their positions "en mass" but their ideas and policy prescriptions may be increasingly marginalised by others who may be more successful at enrolling allies and persuading others to accept their policy prescriptions. Economic theory is influenced from beyond New Zealand, and at certain points in time change is more acceptable than at other points. It is likely that policies would have changed in the mid eighties to some extent but the very rapid adoption of, and adherence to New Right economic policy prescription in New Zealand in the mid eighties and the subsequent period was certainly influenced by the climate of crisis at the time. This climate of crisis was at least to an extent manufactured, by groups and individuals who were anxious to see a significant change in the political economy and culture of New Zealand.

During the Great Depression Sir Otto Niemeyer of The Bank of England was invited to advise the government of New Zealand on monetary policy. At the time traditional economic theorists, or whom Niemeyer was one, were struggling to maintain the Gold Standard and a monetarist stance based on fixed exchange rates and firm monetary conditions. Niemeyer's report made the following key recommendation:

....an independent Reserve Bank should be set up charged with the responsibility for the stability of the New Zealand currency, invested with the privilege of note issue, and charged with holding the Government account and the banking reserves of New Zealand (1931, p.5)

The primary duty of the Bank shall be to ensure that the value of its notes remains stable. To this end it must exercise control.... over monetary circulation and credit in New Zealand. (p.7)

The Reserve Bank Bill of 1932 followed essentially from Niemeyer's report. Clause 12 gave effect to the monetarist, stable exchange rate stance noted in Niemeyer's report. But by the

passing of the bill in 1933 the clause had been significantly reworded. A. D. Park, The Secretary to the Treasury, wrote to Sir Otto to explain the change.

Park explained to Niemeyer that reference to stability was thought likely to provoke arguments in Parliament in favour of relating the currency to internal commodity prices, a course considered neither practicable nor desirable.... Park told Niemeyer that he interpreted the reference to the economic welfare of the Dominion to imply that the Bank should endeavour to keep the value of its notes stable (Hawke, 1973, p.32).

In the 1930s, exchange rate stability was the objective of monetary policy, so Park's concern that Parliament might advocate internal price stability was a crucial one. Adherence to the gold standard required domestic prices to fall to correct an overvalued exchange rate. Consequently to advocate internal price stability in the 1930s was to argue against the gold standard against the orthodox monetary theory of the day. In this respect, orthodoxy was fighting a losing battle. The United States also departed from the gold standard at the height of the Great Depression in March 1933, and three months later President Roosevelt declared the United States to be in favour of internal price stability (Dalziel, 1993, p80). The above exchange may be regarded as an illustration of the translation process, and certainly indicates the centrality of the interpretation of events and concepts at the time as playing a most crucial part in what is made problematic and indeed the identification and mobilisation of the "appropriate" tools to solve the problem.

Other developments continued in economic theory over the ensuing period, the 50s and 60s saw in particular the appearance and increasing influence of the Phillips Curve (Phillips, 1958). Phillips formally demonstrated in 1958 what policy-makers were already beginning to discover for themselves: that there was a trade-off between inflation and unemployment. Expositions of these ideas were the staple of economic theory for the next two decades (Lipsey, 1960; Samuelson and Solow, 1960). Policy-makers had to choose between unemployment or inflation.

Such developments were reflected in amendments to the Reserve Bank of New Zealand Act and also reflected disagreements between Labour and National over prioritising the two objectives. For example when the third Labour Government came to power in 1972 it moved to strengthen the Reserve Bank Act's commitment to the employment objective.

For the purposes of this Act, the Minister may from time to time communicate to the Bank the monetary policy of the Government, which shall be directed to the maintenance and promotion of economic and

social welfare in New Zealand, having regard to the desirability of promoting the highest level of production and trade and full employment, and of maintaining a stable internal price level (*Statutes*, 1973, No. 16, section 8).

The principal clause, noted above, 'full employment' replaced 'employment' indicating the objectives of the new government. Prior to 1984 Labour Governments consistently placed full employment over price stability in setting monetary policy in the stated objectives of the Reserve Bank. The 1988 Budget saw a reversal of this position by the fourth Labour Government. The Reserve Bank being required to:

formulate and implement policies that make the maximum possible contribution to achieving and maintaining a stable general level of prices' (Douglas, 1988, p. 10).

The above events can clearly be seen as presenting our history of problematisations. Economic events and economic statistics preclude impartial analysis. Such data can only be analysed and evaluated within the confines of techniques and theory available at the time. Over the period since the 1930s different economic theories have been in the ascendency at one time or another, and it should come as no surprise that similar economic data might provide very different policy prescriptions depending on whether one takes a Keynesian or New Right interpretation. Such differences are always present but whereas in the late thirties economic problems were problematised in terms of a Keynesian perspective, this was not the case by the eighties. By 1984 economic policy options were being prepared against a background of New Right interpretations, elements of which bore a remarkable resemblance to the classical economic theories which had been "discredited" by the 1930s.

By 1989 the pendulum had swung completely in terms of the status of the Reserve Bank and we were about to see the establishment of an "independent" central bank with the latest Reserve Bank Act. December 1989 saw the passing of a new Reserve Bank Act. Section 8 of the Act now sets out the statutory objective of monetary policy :

The primary function of the Bank is to formulate and implement monetary policy directed to the economic objective of achieving and maintaining stability in the general level of prices (*Statutes*, 1989, No. 157, section 8).

Clearly developments at the Reserve Bank favoured an increasingly "non- interventionist" stance and the increasing emphasis on monetary policy and free market economics. This was a trend in the development of New Zealand policy institutions which was perhaps even more marked in developments at the New Zealand Treasury.

The following section will discuss aspects of the influence of the executive, and especially the Treasury on the policy making process. The position of Treasury will also be shown to be that of a "centre of calculation" and "obligatory passage point" within the powerful networks of the state and public governance.

5.6 Treasury: the "Obligatory Passage Point"

Latour sees the establishment of "facts" as a process which is never complete and certain, but one which reaches its highest level of development within sophisticated networks. Within such networks texts are written, allies are enrolled, inscriptions are used to translate and "bring home" knowledge. It is within these networks and at their centres that knowledge is accumulated within laboratories and "centres of calculation". These critical groups of people or organisations which accumulate the knowledge and control its dissemination and access are in potentially very powerful positions at "points of modality" within the network. Although clearly Treasury has been a significant part of the state apparatus since its inception, it appears to have been increasingly successful at cumulating knowledge (of the economy) and expanding its "research" function in a clear move to be the "centre of calculation" in regard to New Zealand economic policy

The post-war era in New Zealand has been marked by significant changes in the political economy underlying policy-making.

Social democratic Keynesianism was ascendant from 1935 to the late 1970s...a broadly Keynesian and interventionist approach to managing the economy followed from the late 1970s to 1984. The fourth Labour Government, elected in July 1984, fully embraced New Right neoclassicism and this has remained the dominant analytical framework for policy formulation, being extended rather than abandoned by the fourth National Government... Few would deny that Treasury has played a key role in this historic shift in policy-making (Goldfinch and Roper, 1993, p.50)

For fuller discussion of the detail of policy changes see Boston and Dalziel (1992). In the 1950s and 1960s Treasury followed a broadly Keynesian perspective. During the late 1970s and early 1980s Treasury abandoned Keynesian macroeconomic theory and demand management. After 1984 Treasury briefing papers show a very close correspondence to the analytical assumptions, ideological values and policy prescriptions of the schools of economic thought associated with the New Right.

Treasury's power and influence within the policy-making elite, often referred to as the Wellington policy community, has grown significantly over the last two decades (Boston and Cooper, 1989; Goldfinch and Roper, 1993). Despite claims from Treasury to be a 'non-political', 'rigorously neutral', and 'independent' adviser to government (Treasury, 1984, p. iii; 1986, p. 4; 1992, p. 2) their intimate alignment with the theory, ideology, and policy of the New Right, tends to indicate a partisan line in policy advice. This adherence to new right policies and a deep involvement in the political process has resulted in Treasury combining anti-socialist, pro-business advice with considerable impact on policy formation. Some observers have argued for institutional changes to the machinery of government in order to ensure contestability of advice and perhaps a better balance of alternative policy.

Though the major capitalist nations were all turning increasingly from Keynesian economic policy, and the associated interventionism, it was the rapidity and abrupt nature of the change in New Zealand that was notable. The 1970s through to 1984 and the election of the 4th Labour Government is largely regarded as a highly interventionist period, though commentators (Boston, 1990, 1992; Easton, 1989, 1990a, 1990b; Kelsey, 1993, 1995; Roper, 1991a, 1991b) differ on the extent to which this could be regarded as an application of Keynesian policies. The Treasury argued that government itself had been the major obstacle to adjusting the economy to new realities. Protectionist policies against imports and selective support of sectors of the economy came in for especially harsh criticism:

Incomes were maintained throughout the community at levels which were not appropriate given the large drop in our terms of trade.... We have protected subsectors of the economy at the expense of general welfare. To adjust faster we would have needed a steadier monetary policy, smaller government deficits and a freer exchange rate policy. These are fundamental, but they must be supplemented by action to overcome the sclerosis that has built up through the regulation of many markets of the economy....' (Treasury, 1984, p.107)

The government deficit was described as 'excessive', the re-establishing of monetary controls was called for. Treasury urged a need for more flexibility in exchange rate management and 'suggested that the Government should plan for a floating rate regime' (Ibid, p.116). In the labour market, Treasury prescribed lower real wages and increased flexibility (Ibid, p.118); reform of State-Owned Enterprises along private-sector lines (Ibid, p.120); less government provision, and greater targeting of services was recommended (Ibid, p.119). A call for the removal of interest rate controls was also made because

... besides the disruption they bring to the vital functions of financial markets, they work directly against

the primary intention of monetary policy which is price stability through the management of the money supply' (Ibid, p.115).

Treasury called for the abandonment of direct intervention, more transparency in macro-economic policy and the use of market mechanisms to increase efficiency. Treasury, during the post-war era, has consistently been a powerful and influential agency (Boston and Cooper, 1989; Goldfinch and Roper, 1993).

Treasury's influence is greater than that of any other department, because, as the controller of finances, it is at the centre of the administration, and its financial decisions and recommendations pervade every aspect of government activity (Polaschek, 1958, p. 252).

Treasury is the most powerful government department in New Zealand [its influence] extends over the whole State apparatus and touches almost every important area of public policy, be it macroeconomic policy social welfare, education, governmental administration, broadcasting, and even defence and foreign policy (Boston and Cooper, 1989, p.123).

As a result of the pre-eminent position of Treasury a good deal of attention has been given in recent years to the role played by Treasury's strategic institutional location within the State and its influence over policy formulation (see Boston, 1989 and 1992; Boston and Cooper, 1989; Douglas and Cullen, 1987, pp. 127-135; Easton. 1990a; Galvin, 1985, 1991; Grace, 1990; Jesson, 1989; Lauder, 1990; Oliver, 1989).

A further indicator of the influence of Treasury lies in the people employed in the institution and their career paths.

Typically, middle-ranking Treasury officers have been promoted to top posts in other departments, while senior officers have retired and taken up directorships in some of New Zealand's major companies. (Boston and Cooper, 1989, p.137)

This situation provides Treasury with great influence within the financial community as well as the bureaucracy. The large staff, approximately 150, of highly qualified financial and policy analysts dominated by people with economics backgrounds has enabled Treasury to build a reputation of expertise and intellectual strength (Boston and Cooper, 1989, p. 126).

5.7 Enrolment of Allies and the Building of a Network

Douglas [NZ Minister of Finance in the 4th Labour Government] brought monetarist ideology into government and the extent to which key business people were prepared to run with that ideology began to relate to their degree of power. Power suddenly was something new--it lay not in wealth, market

capitalisation, dominance of an industry sector or the number of employees, but in ideas and the ability to disseminate them, to persuade with them, throughout all areas of New Zealand life... It was because of ideology that business networks have come to inform those of politics, that businessmen now have the opportunity to shape policy without having to become politicians themselves. (Legat, 1991, p.61)

Following Latour (1987a) we may interpret the particular changes in New Zealand post 1984 as being also heavily influenced by attendant changes in the activities and the degree of political activity of business and related interest groups. It was noted earlier that in some cases there were very close links associated with the movement of former Treasury staff to private sector companies and other organisations, such as the NZBR and a number of economic consultancies. A number of new organisations appeared seeking to influence government policy at this time and other organisations experienced very significant changes in their relative positions as regard their ability to influence policy or even be invited to contribute. Organisations such as the NZBR, which lobbies for private sector organisation very generally, have grown in influence while sectoral groups have seen their influence wane. This in itself has been influenced by and at the same time reinforced the predomination of broad influence and promotion of New Right economic policy.

The Networks that developed during the asset sales process--where the same names kept cropping up as advisers, float organisers, buyers--can be made to appear sinister because these days business is playing a new role. Businessmen stalk the corridors of power not simply for the benefit of their own enterprise or their own sector, as has been the practice in the past with groups such as the Manufacturers' Federation and Federated Farmers lobbying for their own ends, but in areas which go well beyond traditional business interest. (Legat, 1991, p.62)

Business associations have an inherent structural advantage over trade unions and social movements when lobbying government for desired changes in policy because the State is structurally limited and constrained by its fiscal dependence on revenue derived from the taxation of incomes generated in the process of capital accumulation. Because State power is largely dependent on capital accumulation--a process which the State cannot itself directly control in a private enterprise economy--'every occupant of State power is basically interested in promoting those conditions most conducive to accumulation' (Offe and Ronge, 1982, p.250). These domestic constraints have been compounded by the growing internationalization of the economic system: '[T]he growing international mobility of capital increases pressures on the State to maintain conditions favourable to investment or face the consequences of capital flight' (Jessop, 1983, p. 93).

There are substantial differences between the associations representing capital and labour, unions are "secondary" organizers and capital itself functions as a primary organizer' (Offe,

1985, p. 176). These differences mean that to influence the state policy formulation process

vastly different efforts are required on both sides of the major dividing line of social class (Offe, 1985, p.199).

There are a number of business associations in New Zealand. One of the common features of most sectoral business associations is a tendency to work through the Employers' Federation on industrial relations policies. The various sectoral business associations usually follow a set of informally accepted parameters in their representational activities. The organizational characteristics of New Zealand business associations are a product of:

- 1) the generally shared interests of employers in increasing labour productivity, reducing unit labour costs, and so on; and (extraction of surplus value)
- 2) conflicts of interest arising from the sectoral nature of the economy (circulation and distribution of profit) (Offe, 1985, p.197).

Federated Farmers represents the interests of those in the agricultural sector. The Manufacturers' Federation, the Merchants' Association, the Bankers' Association, Bankers' Institute, the Financial Services Association and Insurance Council of New Zealand represent the interests of those in their respective sectors (see Roper, 1992; Vowles, 1992; Wanna, 1989). The Employers' Federation is primarily concerned with the former (see Brosnan et al., 1990, ch.7; Deeks and Boxall, 1989, pp.62-8; Rudman, 1974).

The mid-1970s saw an increase in the political activity of general policy-oriented business associations which differed from either the Employers' Federation or the sectoral associations (Roper, 1993; Jessop, 1990). In New Zealand the most prominent organisations of this type are the NZBR, Chambers of Commerce, Institute of Directors, and the Top Tier Group. These organisations have memberships which span, to a degree, the whole range of business activity.

These associations have developed comprehensive policy frameworks which may be conceptualized as 'hegemonic projects' or 'accumulation strategies' (Jessop, 1990, chs. 5 and 7). They have emerged to identify and articulate the 'common concerns' or interests of the so-called 'business community' as a whole.

... this type of business association which, relative to sectoral and employers associations, exerted by far the most influence over government policy-making during the second half of the 1980s and early

1990s. (Roper, 1993, p.154)

Since the late 1960s there is increasing evidence of a centralisation in the ownership of capital in New Zealand. Consequently the larger companies have tended increasingly to exert influence within the sectoral business associations and the Employers' Federation (see Roper, 1990). These changes have also underpinned the growing power and influence of the NZBR. A second notable change has been the relative growth in the capitalisation of the financial services sector relative to the other sectors and that of the industrial sector in particular. At the same time manufacturing for the domestic market has declined while a growth has taken place in transnational export-oriented industrial corporations. The 1980s also saw the spectacular rise and even more spectacular collapse of investment and property corporations. These changes in conjunction with wider international trends, have helped to bring about significant changes in the ideologies and politics of business in New Zealand

Business associations have long enjoyed privileged access to both ministers and the key State agencies involved in policy-making, especially Treasury and the Reserve Bank (Boston and Cooper, 1989). Business leaders can participate directly in the formation of public policy, through the practice of co-option onto policy-making bodies. The Gibbs Report (1988) on health and the Picot Report (1988) on education are striking examples of this practice. Boston and Cooper (1989, p. 137) have noted the interchange of staff between large corporations, business associations, private sector research agencies and Treasury and the Reserve Bank.

The change of government in 1984 saw a dramatic change in the level of influence of these groups. Treasury and the Reserve Bank, with allies in the financial community, quickly replaced the previously powerful industry lobby.

The business government connection has at its core a group which circulates the same monetarist, New Right views through the system. Take Roger Kerr, for example, a former Treasury official who is now chief executive of the Business Roundtable. Or Rob Cameron, a former Treasury official who now works for Fay Richwhite. These are men who work in the engine room. The connections are even more apparent among the men at the helm of enterprise. A small group of Auckland businessmen--Michael Fay, David Richwhite, Alan Gibbs, John Fernyhough, Douglas Myers--are the new power elite... they demonstrate how outside of Treasury, power to influence policy has shifted... Through the machinery of the Business Roundtable, for example, they now proffer strongly-worded opinions on everything from education to health. (Legat, 1991, p.62)

5.8 Concluding Comments

The discussion presented above has sought to apply the ideas of Latour (1987a) and Rose and Miller (1992) to an analysis of New Zealand governance. The development of economic and political policy has been portrayed as the result of a process of problematisation in which groups within society seek to determine the agenda for change. In the process of "translation" allies are sought and arguments are engaged in, some won others lost or inconclusive. The outcome of such activity is often unpredictable and the emergence of policy and is affected by unexpected consequences and the interplay of a complexity of forces within society.

... 'political' forces can only seek to operationalize *their* programmes of government by influencing, allying with or co-opting resources that they do not directly control - banks, financial institutions, enterprises, trade unions, professions, bureaucracies, families and individuals. A 'centre' can only become such through its position within the complex of technologies, agents and agencies that make government possible. But, once established as a centre, a particular locale can ensure that certain resources only flow through and around these technologies and networks, reaching particular agents rather than others, by means of a passage through 'the centre'. Financial and economic controls established by central government set key dimensions of the environment in which private enterprises and other economic actors must calculate. (Rose and Miller, 1992, p.190)

In the New Zealand context Treasury has amassed great influence and power to set the political agenda and provide policy prescriptions. Treasury has become an obligatory passage point. Much policy advice centres on the statements of Treasury staff, data are collected on Treasury computers and manipulated by Treasury staff using Treasury models. With this near monopoly of data and certainly an impressive concentration of economics trained research talent Treasury seems in control of the process of policy development and advice. At the same time much of the data and knowledge accumulated is the direct result of Treasury's control of the process of monitoring State Owned Enterprises. In this manner data is made manageable and made to "flow through" Treasury. Treasury is able to frame policy and also to monitor and comment on implementation. This is certainly a feature of the Health Sector where Treasury has organised and had oversight of policy implementation. Indeed the senior managers of several Crown Health Enterprises have cited interference by Treasury as problematic to the running of their organisations. Some have resigned noting Treasury involvement in management as a major reason for their departure (see discussion in chapter 7, section 7.3). Others have been sacked apparently for not fitting in with Treasury policy.

Rose and Miller (1992) place great emphasis on the pivotal role played by expertise (or knowledge) in the governmental endeavour.

Liberal mentalities of government [faced a problem in explicating the processes of state regulation, and] ... Expertise emerged as a possible solution' to this problem, indeed became, somehow, solution, and so 'the vital links between socio-political objectives and the minutiae of daily existence ... were to be established by expertise' (Rose and Miller, 1992, p.188).

The above analysis provides a broad summary of the development of government policy within New Zealand during the late 1970s to the early 1990s. Developments within the economy and the public sector increasingly resulted in concentration of policy advice to government. Institutions giving economic policy advice to government became increasingly prominent in the policy setting process and increasingly centralised. Consequently government leaders may have genuinely believed that "there was no alternative'. The increasing emphasis on economic efficiency above any other goal is a feature of policy developments during this period. The New Right were able to problematise the issue of state intervention with great success, and were in the process able through the rhetoric of the 'Public Choice School", and the concentration of economic research and resource within Treasury and the Reserve Bank, able to effectively silence any opposition to their free market policies. The concentration of resources enabled a strong and convincing argument to be established, while the theoretical prescription of public choice made anyone raising opposing viewpoints open to the charge of being representative of a vested interest. Clearly this was a problem for university academics and health service professionals who were easily placed in this category.

...there is an absence of theoretically informed and historically detailed accounts of the origins, development and crisis of the welfare State in New Zealand. ..research is required,...because the Welfare State (and proposals to extend or 'downsize' it) will remain central to political debate in New Zealand for the foreseeable future.'(Rudd, 1993, p.245)

This instance of the problematising process, is indicative of a general trend identified in the writings of not only Callon and Latour, but also Foucault (1991). Latour and Callon however are most relevant to the objectives of this thesis, providing as they do a 'sociology of translation and of enrolment which constitutes a framework for analysing the activities of government within a network of alliances and consisting of the independent and yet calculable actions of many unrelated agencies and temporal strategic alliances.

The result of these and similar operations is that mobile and 'thixotropic' associations are established between a variety of agents, in which each seeks to enhance their powers by 'translating' the resources provided by the association so that they may function to their own advantage... When each can translate the values of others into its own terms, such that they provide norms and standards for their own ambitions, judgments and conduct, a network has been composed that enables rule 'at a distance'. (Rose and Miller, 1992, p.184)

Despite the period of time over which we have seen the policies of the New Right implemented as yet there has been little significant modification of the policy prescription nor any clear benefits for the average New Zealander from the upheavals which many of the policies have resulted in. At the same time though some opposition has been apparent, particularly in the Health Sector, this has generally not been especially influential. We might regard this as further evidence of the power of modern policy makers and politicians to harness the processes of power/knowledge and or the communication media to provide a convincing and strong argument for their prescriptions.

From the mid-seventies onwards, in Britain, the USA and elsewhere in Europe, neo-liberal analyses began to underpin the appeal of conservative political programmes and pronouncements. The political mentality of neo-liberalism breaks with welfarism at the level of moralities, explanations and vocabularies. (Rose and Miller, 1992, p.198)

What is of note here is the all pervasive nature of successful problematisation and the resultant nature of the power of the "facts" so established to influence policy over broad ranges of the economy. The correctness of New Right economic policies had been established through an enormously successful problematisation process it was only a matter of time before health itself became problematised and a subject for treatment.

One of the central mechanisms of neo-liberalism is the proliferation of strategies to create and sustain a 'market', to reshape the forms of economic exchange on the basis of contractual exchange. The privatization programmes of the new politics have formed perhaps the most visible strand of such strategies, and one most aligned with the political ideals of markets versus state. (Rose and Miller, 1992, p.199)

And so to Health...

Notes

1. Rogernomics was the name given to the policy prescriptions of Roger Douglas who was the Minister of Finance, from 1984 to 1988, and the primary instigator of the deregulation of the New Zealand economy from 1984 to 1987.

2. A period of relatively low economic growth has been experienced across all the major developed nations of the West and East. From 1974 the performance of the New Zealand economy was very poor in comparison to the period pre 1974. During the period following the war New Zealand had experienced a 'long boom', strong economic growth, full employment, low inflation, favourable terms of trade and a relatively healthy balance of payments. The recession after 1973 was not confined to New Zealand, a number of OECD countries had been similarly affected.

Over the whole period since 1973 growth in [Britain, Canada, France, Germany, Italy, Japan, and the USA] has been at hardly more than half the rate of the sixties and early seventies. The slowdown was greatest (absolutely and relatively) in Japan and least in the USA. If the OECD economies had grown as fast after 1973 as in the previous period then their output in 1989 would have been nearly 40 per cent higher. The extra goods and services available would have been roughly equal to the entire output of the USA (Armstrong et al, 1991, p.233).

Clearly the New Zealand experience post 1973 was not unique and indeed runs parallel to that of a number of other advanced capitalist societies. Some observers have placed a great deal of weight on the negative impact of New Zealand's worsening terms of trade. (Roper and Rudd, 1993, p.4-5). A number of factors contributed to the 'End of the Golden Weather' in New Zealand and to the about turn in management of the economy. Many of the changes were inspired from outside of New Zealand, though their effect may have been particularly pronounced in this country.

	% GDP Growth 1974 to 1989	% GDP Growth 1960 to 1973
OECD	2.7	4.8
USA	2.6	4.0
Japan	3.9	9.6
Europe	2.2	4.7

Source: (Armstrong et al, 1991, p. 234).

The decrease in economic growth during this period also saw other effects on world trade patterns, including the emergence of major international trade imbalances between the economic superpowers--Japan, USA and the newly industrializing countries (see Armstrong et al, 1991, ch. 14). Other serious effects have been noted to both economic and social conditions: a decline in profitability, a decline in the growth of labour productivity and the failure of employment growth to offset the expansion of labour supply (hence increasing unemployment). Clearly the collapse of the long boom in New Zealand is not unrelated to the economic crisis in the developed world from 1973 onwards.

Chapter 6: Reform of the New Zealand Health System: Problematization, Inscription and Change

It was because of ideology that business networks have come to inform those of politics, that businessmen now have the opportunity to shape policy without having to become politicians themselves... Those who shared Douglas's [Minister of Finance] free-market, less-government reforming zeal were those who got the plum jobs as government advisers and then as directors of the new state-owned enterprises. Some of those were old Douglas mates like Alan Gibbs who was handed the job of dreaming up ways to reform the health system... (Legat, 1991, p.61)

6.1 Introduction

This chapter will seek to explicate the changes in the New Zealand Health sector informed by the concepts of problematization, inscription and the construction of networks (Callon (1986) and Latour (1987a, 1993)). This will involve applying a framework of interpretation based on the concepts of Latour's sociology of translation. Material on problematization and inscription will be incorporated into the chapter in order to provide an explanatory frame of reference which will enable us to make sense of the processes of change in the New Zealand Health Sector. The sociology of translation will be used to explain the processes which underlie the changes and will be used to capture effects such as the effect of policies in producing new networks within which "allies" could be enrolled in support of the Health Reforms.

The tendency for economic policies to be imported into New Zealand from overseas theoreticians, was described in Chapter 5, particularly section 5.4. It should be no surprise that policy makers and interest groups again looked overseas for Health reform policies. As in the 1970s and early 1980s with the sharp movement from interventionism toward the new neoclassical economic hegemony, the late 1980s saw similarly informed developments in New Zealand health policy.

6.2 Problematisation of the Health Sector

Problematisation is the process through which the aims, interests and objectives of discourses are made visible. In relation to the procedures and objectives of accounting, specific accounting techniques are "seen" in new and problematical ways. Robson (1991) describes this process through the concept of translation. It is through translation that a "consciousness" of accounting techniques and calculations particularly amongst non-accountants is constructed.

The problematisation of the accounting practice can provide the motive for altering the accounting conventions of recording and measurement, or producing new forms of accounting calculation. In so doing there may emerge a (perhaps partial) solution to the problematic. It is through the operation of these ... construct[s] [that] the arena will be analysed in terms of translation. (Robson, 1991, p.551)

Ideologies, objectives and bodies of knowledge are what Latour refers to as discourse and rationale. These are the ideas and processes that provide the legitimacy for proposing one course (of action) rather than another. These ideas, are formulated and refined within the institutions of political and economic life. Discourses are everywhere in society. They are current in individual state agencies, corporations, universities, political parties and interest groups. They are aimed at a particular analysis of the political, social or economic. Though specific discourses may be applied to policy making in a variety of organizations, they rarely provide a societal consensus.

There are several instances of the use of accounting techniques by the UK government as a means of, or at least as a support for, new forms of organisational structure and control (Miller & Rose, 1990). Events in the organisation and management of the National Health Service (NHS) illustrate this. The NHS has been subject to a programme of restructuring through the introduction of new forms of budgetary and resource allocation systems since the early eighties (Pinch et al, 1989; Preston et al., 1992). Similar technologies have been introduced into the New Zealand Public Health Sector (Ashton, 1992a and b; Blank, 1994). Different methods of costing, together with changed organisational objectives, structures and performance measures, have been used by the UK and NZ governments to enable programmes of "efficiency" and "value for money" (Rea & Cooper, 1989).

As part of this process of refabricating the organisation and its aims, accounting techniques, such as budgeting, are being drawn upon to build networks of accounting inscriptions between government agencies (Treasury, Department of Health), regional authorities, hospitals, consultants and General Practitioners in order to visualise the NHS in new ways, to facilitate calculations according to the purposes of governmental agencies and to enable them to act upon such "elements" within the NHS in

the name of efficiency. (Robson, 1992, p.702)

As calls are being made for organizations to be changed in the name of the vocabulary of economic efficiency and rationality, calls will also be made for the extension of modes of economic calculation to objectify and operationalise the abstract concepts in the name of which change is occurring (Hopwood, 1990a, p. 21).

... change is not introduced to solve specific problems, but to express ideological commitment. The use of market and private sector management methods has been identified as a general solution to public sector problems. (Stewart and Walsh 1992, p.500)

The problematisation process plays a significant role in the mobilisation of policy at the institutional level and within individual organisations. At the national level the use of inscriptions resulting from the new accounting for health services plays a role in a much broader process which effectively problematised the nature of the health sector in general and notions of a publicly administered health system in particular. Notions of the efficiency of private sector management techniques were widely promoted as suitable to deal with 'established' inefficiencies in the health system. Views of the universal availability of 'free' health services, accessible to all New Zealanders were attacked in a number of ways, one of which involved the establishment of a 'Core' Health Services Committee (CSC) (National Advisory Committee, 1992a, 1992b, 1992c, 1993) which would seek to establish a list of those services which might 'reasonably' be made available universally. Though the CSC has not been successful in producing such a list of health services, its activities, combined with the actions of others, has led to a change in the public attitude to the availability of health services (Blank, 1994).

The political system in New Zealand has been characterized by highly concentrated political authority and few checks and balances (see discussion in chapter 5). This tends to provide the capacity to make rapid and comprehensive shifts in policy, providing potential benefits and problems. In comparison to the US, New Zealand has the capacity to deal with problems quickly. Whether this has been an advantage remains to be seen. These features have facilitated both the dramatic policy changes which have been seen throughout the New Zealand public sector in addition to the changes in monetary and broad areas of fiscal policy.

Problematisation of issues is more readily achieved in these circumstances, since there is a lack of strong networks and groups able to provide effective opposition. New Zealand health

reforms have followed some overseas models, particularly on the introduction of managerialism and the introduction of a quasi-market into the provision of health services. The New Right has been able to establish a policy framework very quickly by transferring ideas established in other areas of the public sector. While ideas such as the importance of the profit motive and privatisation were issues which could only be very gradually introduced to the National Health Service in the UK. In New Zealand it seemed to be virtually unquestioned that problems defined in other public sector areas must, as a matter of course, also afflict health sector organisations. Not only was no clear evidence of inefficiency forthcoming, very little evidence was available at all on the health sector (Ashton, 1992a and b; Blank, 1994). Problematisations were effectively imported into health from other areas. It was almost a matter of faith that private sector organisation and management must be more effective than the present administrative structures.

We pour money into our hospital system, without asking what is coming out the other end. We pay them \$2.4 billion, without even asking what quality and quantity of treatment they are going to provide throughout the year ... There's massive amounts of inefficiency; that means that most doctors could do at least twice as much work in the private sector (Gibbs, et al, 1988, p.39)

The restructuring of the New Zealand health system by successive Labour and National government is in marked contrast to the difficulties experienced in the US (Blank, 1994). But such rapid change also has been demoralizing to health care workers and has increased feelings of insecurity and uncertainty in the health service (Blank, 1994). The changes have also been confusing and unsettling to the public and consumers of health care. This is despite the efforts of the government to inform citizens about what the changes entail and to convince them that the reforms are for the best.

Within the health sector institutions there has been significant structural change, management and personnel have undergone dislocation. Concerns have also been raised as to the high monetary costs of implementing new administrative structures necessary to support the reform process (Herald 22nd Feb, 1995). The public sector has been the subject of much attention from various governments in the western world over the last 15 to 20 years. The widespread adoption of right wing economic policies in both reorganisation of the state sector and in the framing of public policy is widely evidenced. The Health Sector has come in for particular attention in several countries and similarities are evident across various countries. Change has generally involved the introduction of "market reforms", notably in terms of the introduction of quasi market structures into the purchase and provision of health services. Health Reform

in the UK is described, by Rose and Miller, in the following terms:

Between the Ministry of Health and the practitioners of the cure during the 1950s, a complex administrative structure was assembled, in the hospital sector alone this comprised 14 Regional Hospital Boards, 36 Boards of Governance for Teaching Hospitals and some 380 Hospital Management Committees. To govern this system in a 'rational and effective' manner as envisaged in the 1944 White Paper posed a problem of information: even the most basic information about the number and distribution of doctors was lacking at the periphery let alone the centre. This 'lack' was to be the start of a massive attempt to transform the activities of healers into figures that would make medicine calculable. The initial form of problematisation was financial for the new technology displaced earlier ways of relating medical care to money. A series of studies lamented the limited information possessed by the Ministry... (Rose and Miller, 1992, p.193)

The use of reports from public committees and more recently consultants is strongly in evidence in New Zealand (see section 6.5). A selection of these reports are referred to in the following sections of this chapter. Particular mention can be made of the Gibbs report, because of its wholehearted championing of the New Right economic policies being expounded in other arenas at the time and the uncompromising approach of the report to the necessity, urgency and inevitability of the reform process (Gibbs et al.,1988).

New Zealand medical developments and structure of the Health System followed closely those of the UK in the middle of the century (Blank, 1994). The issues which caused concern within the Health Sector followed a similar pattern in New Zealand to that described below in the UK. Initially in the UK:

... medics came to dominate the administrative networks of health, forming a medico-administrative bloc that appeared resistant to all attempts to make it calculable in a non medical vocabulary.... (Rose and Miller, 1992, p.194)

The introduction of professional administrators into the Health Sector certainly took place, in earnest, rather earlier in the UK than in New Zealand.

By the 1960s, the technological questions of how the machinery of health was to be governed were re-posedThe Plowden Report of 1961 called for the use of public expenditure control as a means to stable long-term planning, with greater emphasis on the 'wider application of mathematical techniques, statistics and accountancy' (Chancellor of the Exchequer, 1961, quoted in Klein). A range of new techniques were invented by which civil servants and administrators might calculate and hence control public expenditure: the Public Expenditure Survey Committee (PESC), the use of cost benefit analysis, of PPB (Planning, Programming, Budgeting) and PAR (Programme Analysis Review). (Rose and Miller, 1992, p.194)

This may have resulted in some interesting differences in the experience of developments in the two countries. But other than timing differences the changes to the health sector have been essentially similar in both countries (Blank, 1994). The influence of problematisation is clearly in evidence in both economies. What is perhaps of particular interest in the New Zealand

environment has been the ability of Treasury to occupy a central role in the development and promulgation of a very wide range of public policy since the mid eighties. The ability of Treasury to create and maintain its position as an "obligatory passage point" is a notable feature of the politico-economic environment in New Zealand since the mid eighties (see discussion in Chapter 5, particularly section 5.6).

Changes in the relative influence of groups within the health sector have taken place over time as indicated above. During the 50s and 60s clinicians held key positions within the decision making hierarchy. Later nurses took a more significant role. More recently administrators have assumed a more central position (interview, Head of Waikato Cancer Unit, 14th October, 1994). Others have noted similar changes within the health sector in the UK:

... medical monopoly over the internal working of the health apparatus began to fragment. General practitioners and consultants began to stake rival claims for dominance. New actors proliferated in the health networks- nurses, physios, occupational therapists - and began to organize themselves into 'professional' forces, claiming special skills based upon their own esoteric knowledge and training, demanding a say in the administration of health, contesting assumptions of the superiority of medical expertise. (Rose and Miller, 1992, p.195)

The provision of health services has become increasingly complex both in terms of medical technology and the development of new treatments and new specialities. As complexity has increased the temptation to model and apply techniques of quantification to health services and health organisations has grown (Rose and Miller, 1992). Techniques of quantification have led to the appearance of health economists to complement the new types of health specialist and the increasing complexity of the provision of health services.

Health economists invented themselves and installed themselves in the Ministry of Health and outside it, articulating a new vocabulary for defining problems and programming solutions. Yet for some fifteen years these new mechanisms for central planning according to rational criteria appeared destined to fail... The conflicts between rational planning and expert powers became more evident. As the health apparatus threatened to become ungovernable, a new form of rational expertise grounded in the discourse of health economics, began to provide resources for those who wished to challenge the prerogatives of doctors. **New devices began to be developed for evaluating the costs and benefits of different treatments and decisions, rendering them amenable to non-clinical judgments made neither by doctors nor by local politicians, but by managers.** (Rose and Miller, 1992, p.195)

Latterly there has been a significant drive to apply quantification within health organisations in New Zealand. These changes include the introduction of casemix accounting systems and DRGs. This has had a consequential impact on the growth of managerial and especially accounting positions. New Zealand health providers have seen a very marked increase in people within these functions.

6.3 Creating a Network of Allies: New Structures in the Health Sector

An image of inefficiency, within the health services, was promoted by government and other agencies. As a consequence New Zealand embarked on applying a management culture within the Health Sector, with a consequent massive increased requirement for management information. This would be necessary for internal management of health providers and also to facilitate the contracting process between providers and purchasers (Blank, 1994). Following Latour (1987a) it would seem as if the legislation giving effect to the reforms was only a minor step in the problematisation process. The legislation (Health and Disability Services Act, 1993) provided the lightest of frameworks with which to begin the reform process. The reforms took shape following this event as restructured organisations sought to work within the newly established system.

The larger health providers sought to recruit managers with private sector experience, largely at the instigation of their new management boards who were largely constituted of allies of the reforms and supporters of the National Government. It was only as these managers began to make an impact within their respective organisations that the reforms took shape (see Dent, 1991 for a discussion of such changes in the UK). Their enthusiasm, their ability to take others with them, to enrol others into the reform process was what was to make the reform process what it was to become. It was at this stage that reforms might become real to other members of the health organisations or not, or whether the reform process would get bogged down in a series of attempts to decouple the image of the organisation from its internal functioning (Meyer and Rowan, 1986).

The other effect of the reforms was directly to impact on existing institutions and structures within the health sector (see discussion in section 6.3.1 following). An interpretation of these structural impositions could be to see the establishment of new networks of people and organisations seeking to give effect to the market reforms. A set of relationships were created through the legislation which established new institutions. These institutions effected a reconstruction of the critical networks which constituted the New Zealand health sector. Government legislation had the effect of dismembering existing circuits of power and replacing them with redefined and constituted organisations which were to enable the construction of a new network of institutions and people who would give effect to the market reforms. This change by no means ensures the success of the reforms but it provides an

environment and a framework which is conducive to their success. The new and restructured organisations which constituted the health sector provided, at a stroke, potential new allies for the health reformers.

6.3.1 Health: From Social Policy to a Competitive Market?

Ministers of Health came to talk in terms of a market for health services:

The simple question ... I ask myself is: am I buying as much health care as I can for New Zealanders? We are fast approaching a time when we genuinely know what it's costing to deliver health care. (Shipley, Minister of Health, Herald, 1996, January 30th)

The recent health system reforms in New Zealand since the early 1980s constitute a major reorganisation of a national health system (Blank, 1994). Successive governments have moved further and further from the ideals of the system created in 1938¹. Arguments (Carr, 1991, p.34) over the inability of New Zealand to continue to fund a system formed at a time when the country had the third highest per capita income in the world have been used effectively to reduce opposition to reforms which have been difficult for many New Zealanders to accept. The New Zealand economy has been successfully portrayed as approaching bankruptcy. Concerns over the level of overseas debt and the debt rating accorded the nation were given high attention by the government and the media through the late eighties and early nineties. The recession and prospects of continued high unemployment rates reinforced the message that state spending had to be reined back and the health sector was not to be made an exception. Clear ideological shifts have taken place. The introduction of market mechanisms along with the insurgence of management principles and accounting practices are not going to be reversed easily.

The 1983 Act introduced structural change aimed at decentralizing public health activities away from the Department of Health to regional agencies. By 1989 twenty-seven hospital boards had been replaced with fourteen Area Health Boards (Blank, 1994). The 1983 Act started a process of structural change which influenced later reforms (Ibid, 1994) culminating in the establishment of four Regional Health Authorities to cover the whole of New Zealand in the most recent reforms.

The 1983 Act also saw the introduction of the population-based funding formula for allocating

resources to hospital boards. This was the first serious attempt to cap hospital budgets, and was portrayed as an attempt to bring public expectations for health services into line with the nation's ability to pay. The 1980s saw two further major reviews of health services. In 1986 the Labour Government commissioned the Health Benefits Review to:

report upon the underlying rationale for state involvement in health and to recommend broad principles and directions for reform (Scott et al., 1986, p. 1).

The review offered a number of options but recommended one. A system under which boards would:

establish rational priorities and plans by researching needs, discussions at the local community level and negotiations with a range of private, voluntary and public providers (Scott et al., 1986, p. 111).

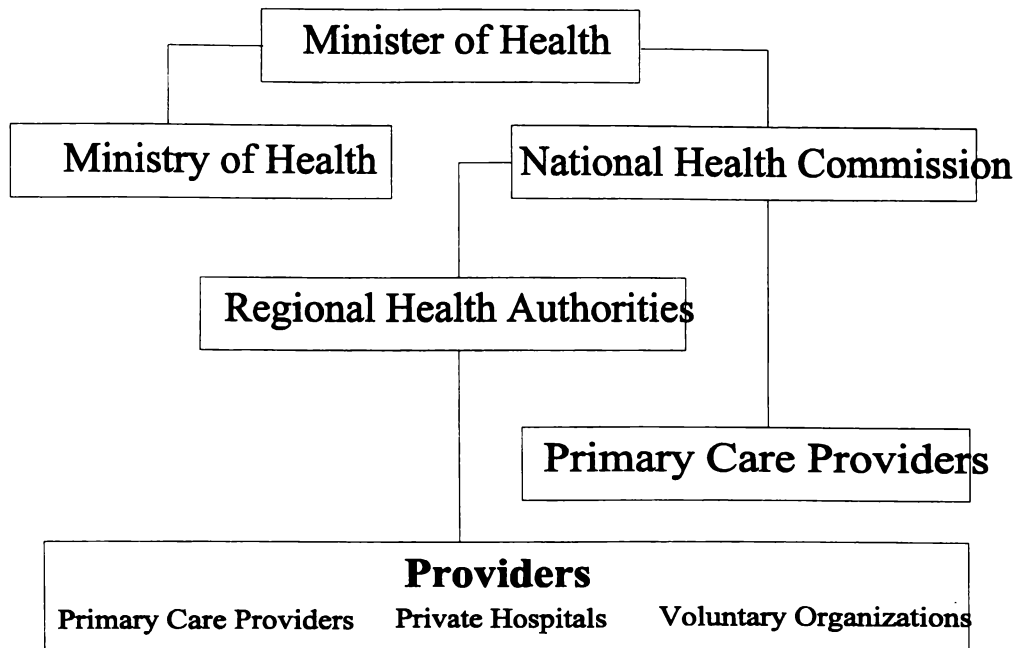
This suggestion was rapidly followed by the Hospital and Related Services Taskforce (Gibbs, 1988). The Labour Government rejected the Gibbs Report findings but the recommendations clearly served as the basis for the reforms initiated by the National Government in 1991 (Blank, 1994). Gibbs recommended that six Regional Health Authorities (RHAs) be responsible for identifying regional health needs, but that those needs should then be met by public, private, or voluntary agencies. The services were to be contracted by each RHA on the basis of quality and value for money. The influence of the management ethic and private enterprise are apparent in the following quote

Under our proposal area health boards would become more like the boards of public companies. They would be able to concentrate on running efficient services, helped greatly by the payment system which would give them an objective value of the services they provide. These prices would drive signals through the system, causing rapid improvements in resource use and clinical practice (Gibbs et al., 1988, p.28).

The Gibbs report marks the appearance of the purchaser/provider split (Figure 6.1).

The [RHAs] would not manage or own any services but would contract with public, private and voluntary providers on a competitively neutral basis (Gibbs et al, 1988, p. 27).

Services were to be identified in great detail in order to facilitate the contracting process. Diagnosis related groups (DRGs) were to be used for this purpose (Blank, 1994). Significant structural reform was to be facilitated by the importation of North American medical technology. The DRG technology would serve as the means by which funding could be targeted to the providers removing the anathema of retrospective reimbursement of costs. Clearly the Gibbs recommend actions set the scene for the reforms of the 1990s.

Figure 6.1: Gibbs Report: Proposed Structure of Health System

Source: Gibbs, et al, 1988, p. 27

In spite of the rejection of Gibbs by the Labour Government major changes in health policy were made in the 1988-89 period. The 14 Area Health Boards (AHBs) were established by 1989. The New Zealand Health Charter, a performance oriented accountability agreement with the Minister, was signed by each AHB. AHBs were given a set of health goals and targets to guide their spending priorities (Ashton, 1992b, p. 150). Management by the old triumvirate system of nurse, doctor, and administrator was replaced by general managers, effectively putting boards under the control of professional managers. The general manager at Waikato hospital described the change as:

... moving very much toward a professional managerial model...only with the stroke of a pen ... since April 1st have non-doctors been in authority positions over doctors... till April 1st there was a tripartite structure where all nurses were responsible up to a chief nurse, all doctors responsible to a medical superintendent, all other staff engineering, clerical etc. responsible to a chief executive. Now a single general manager has overall authority. (Seminar by Garlick, General Manager, Waikato Hospital, 12th October, 1988)

Labour put major initiatives into effect in 1989, to improve the efficiency by adopting private sector management practices, and to increase the accountability of AHBs (Blank, 1994). Access to primary care was improved by increases in General Medical Services benefits and general practitioners were given some incentives to limit user charges. By 1990, significant inconsistencies in cost and services existed across AHBs² (Danzon and Begg, 1991).

Despite the uncertainty regarding the impact of the Labour reforms, in 1991 Simon Upton, the National Minister of Health, initiated sweeping changes in the structure, delivery, and financing of health care. The 1991 Green and White Paper introduced reforms which marked a shift from universal access on the basis of need to targeted health services to specific users, part charges for hospital inpatient and outpatient care, and the intention to identify core health services.

Sweeping changes to the health system in the July Budget [1991] dealt what many see as the final blow to the already tenuous guarantee of a community's input into its health services. It could be argued that the appointment of regional health commissioners is the first step in a more radical long-term move to privatise health. (Legat, 1991, p.63)

The stated intent of the 1991 July Budget was to improve both the efficiency and accountability of the New Zealand health care system, through restructuring. The original version of the reforms³ was set out in the government's Green and White Paper (Upton, 1991) and was largely modelled on the Gibbs Report.

the reforms affecting the delivery of hospital services for illness and accident.... is where the most radical changes have occurred. (Flood and Trebilcock, 1994, p.13)

Major change has, thus far, been concentrated on secondary health care. The organisations most heavily affected by the reforms have been the secondary and primary "health providers" or Crown Health Enterprises.

6.3.2 Regional Health Authorities

The establishment of the RHAs constitutes a central feature of the construction of a "market" for health services. The introduction of a quasi-market is a key feature of the reconstitution of the health sector. Old institutions were removed or replaced (see discussion in section 6.3.1) and a new network of relationships enabled. It is this structuring of relations which provides the framework within which new ideas could be developed and alliances built. These new structures make possible the actioning of the health reforms by creating new alliances which provide a convincing rhetoric in support of the reforms. Institutional arrangements were reoriented in a way which removed old networks and provided the potential for the spread of new ideas (see chapter 4, sections 4.3 and 4.4).

One of the intentions of the health reforms was to address concerns with the Area Health Board structure. It was suggested (Gibbs, 1988) that there was a tendency to make decisions favouring their own or institutional or employee interests rather than the best interests of patients. Making the RHAs free, at least in theory, of such institutional constraints was intended to ensure independent decision making. Each RHA is overseen by a board of no more than seven directors, appointed by the Minister of Health. The directors are to serve for no more than 3 years (Health and Disability Services Act, 1993, s.35.2)

The Health and Disability Services Act 1993 provides specific opportunity for political input into the RHAs' decision-making processes. The government issues guidelines to the RHAs, to be followed in their service planning, prioritising and purchasing decisions. The 1994/95 (Ministry of Health, 1994) guidelines provides (vaguely) that RHAs are "expected to develop processes of change and improvement", yet still they must obtain the Minister of Health's approval before making any significant changes to the existing range of services or the way they are delivered. This pattern is continued in the 1996/97 (Ministry of Health, 1995) guidelines which runs to 94 pages.

6.3.3 Crown Health Enterprises

The 1991 proposals established twenty-three special companies, out of the dissolution of the fourteen Area Health Boards. Over one hundred public hospitals together with other clinics and diagnostic centres were restructured into Crown Health Enterprises ("CHEs"). These CHEs were to constitute the care 'providers' to the RHA 'purchasers'. CHEs are expected to be the main providers of secondary health care services at least for the foreseeable future. In this manner the market for health services in New Zealand was established. The CHEs are expected to compete with other CHEs and private providers and to seek and negotiate contracts with RHAs for the delivery of health care services.

The National Interim Provider Board was appointed in August 1991 as part of the transitional arrangements to deal with the hand over of assets and responsibilities from the AHBs to the CHEs and RHAs and with responsibility for initial policy guidance. The Board advised that it was crucial to the success of the health reforms that CHEs operate according to key principles used by all good business-like organizations, whether privately or publicly owned.

Those principles were said to be:

- (1) clear commercial objectives;
- (2) high quality directors, replaced expeditiously if they fail to perform;
- (3) performance objectives set by shareholding ministers;
- (4) an arm's-length relationship between the government and operational management;
- (5) transparent subsidies where the government wants to provide extra assistance to purchase services that would otherwise not be commercially viable;
- (6) a competitively neutral environment in which public hospitals have no advantage or disadvantage over alternative suppliers, and win their contracts through the efficient delivery of quality health services;
- (7) managers with the autonomy to make effective use of resources;
- (8) mechanisms that hold them strictly accountable on a performance basis, measured against the Minister's goals and targets.

(National Interim Provider Board, 1992)

Several of the above principles stress the independent and competitively neutral environment in which the new institutions were expected to operate. But the influence of political control is still apparent (Flood and Trebilcock, 1994). That the newly formed RHAs and CHEs constituted important nodes within the new networks formed to support the health reforms remains clear.

The directors of the CHEs are appointed by the shareholding minister (Health and Disability Services Act, 1993, s.39). The shares in the CHEs are held by Ministers of the Crown (Health and Disability Services Act, 1993, s.37). The Act also specifically prevents the shareholding ministers from selling or allotting shares other than to each other (Health and Disability Services Act, 1993, s.38), as a safeguard to ease public fears of imminent privatization of the public hospitals.

Although the expressed intent of the reforms (Ibid, 1993) was to provide a neutral environment within which the CHEs would operate in relation to each other, the RHAs, and the government, there has been a continuation of government intervention in the sector.

Despite the National Interim Provider Board's stipulation that CHEs operate in a competitively neutral environment and at arms length- from government, it already appears that in practice this will not be

the case. Given the National Government's express commitment to competition amongst providers, it would have seemed likely that CHEs would be subject to the anti-trust laws existing in New Zealand, ie, the Commerce Act 1986. However the government, through the Commerce Commission, granted all service providers immunity until 30th June 1994 because of their "lack of exposure to market conditions". (Flood and Trebilcock, 1994, p.34)

Some commentators (Hunt, 1993) have criticized this move on the grounds that private providers will have little opportunity of challenging CHEs if they abuse their dominant position in the market. Anti-competitive behaviour could mean private operators' would be unable to win long-term RHA contracts awarded in the first year of operation of the health reforms, and consequently inhibit competition in subsequent years. A clear indication of political influence was the announced, in May 1993, by the Minister of CHEs that the government would underwrite troubled hospitals to bring them back to a "commercial position" (The National Business Review, July, 1993).

On the other hand CHEs have been given additional statutory obligations reflecting the public nature of their ownership that private providers do not have. The CHEs were given a number of disparate objectives to achieve (Health and Disability Services Act 1993, s.11).

(1) The principal objective⁴ of every Crown Health Enterprise shall be to--

- (a) Provide health services or disability services, or both; and
- (b) Assist in meeting the Crown's objectives under s.8 of this Act by providing such services in accordance with its statement of intent and any purchase agreement entered into by it-- while operating as a successful and efficient business.

(Health and Disability Services Act, 1993)

There is no specific requirement on the CHEs to maintain their traditional role of public hospitals as providers of secondary care or provide services to patients in their locality. If the CHE's obligation to operate as a "successful and efficient business" is taken to be foremost ahead of the obligation to maintain ethical standards public concerns might be raised. Often the most cost-effective and ethically correct approach to a health problem may be to seek the "simplest, most natural, least intensive remedy" (Neutz, 1993). CHEs will not have a financial incentive to provide this kind of care unless it is as profitable as more intrusive forms of treatment. Because of the difficulty of providing for and monitoring the quality of health services (Seedhouse, 1993). CHEs may have an incentive to enhance profit margins by making

cuts in quality that the RHAs will find difficult to detect.

In particular, CHEs will have an incentive to cut the quality of services received by those without political "voice"--those who are least likely to be successful in complaining to the RHAs or to the government. This perverse incentive is exaggerated by the absence of the ability to bring an action for medical malpractice as a result of New Zealand's no-fault accident compensation scheme.' (Flood and Trebilcock, 1994, p.36)

6.4 Consultation or Mobilisation: Keeping Allies in Line and Defeating Detractors

With the exception of the Health Benefits Review (Scott et al, 1986) and the current Core Services Committee, public consultation has been minimal in the health reform process (Ashton, 1992b, p. 165). The health community has been largely excluded from the policy-making process, increasingly replaced by outside consultants. Michael Bassett, Labour Minister of Health in 1984, began a pattern of moving away from the advice of medical professionals, with the appointment of an independent committee to review the health benefit system in 1986 (Ashton, 1992b). This trend was followed by the Gibbs report which showed a clear business orientation. Consultants from the US and the UK were used heavily (Gibbs et al., 1988, p. 49).

These processes and the related activities of government in New Zealand may be interpreted in terms of the sociology of translation (Latour, 1987a). The use of 'independent' consultants may be seen as contributing initially to the problematisation of health. In this sense these consultants are far from independent and represent the bringing in of allies by government agencies. The continuing use of consultants over the early period of the reform process also represents actions which are designed to keep in line those who have been enrolled as supporters of the reform process both within health organisations and in the community more widely.

Latour (1987a) describes such activities within the translation process as 'mobilisation'. Mobilisation encapsulates those actions or manoeuvres which are engaged in by the principal in order to ensure that those enrolled in the translation process do not divert the process to their own ends. As more people and technology are enrolled to extend the network and ideas are increasingly accepted as given, facts become 'true'. But at the same time the ideas are increasingly under threat because of the difficulty of ensuring compliance and agreement

among those enrolled. As more people are brought in the principals of the reforms must engage in 'mobilisation' activities to make certain that their intentions are not hijacked by others and their ideas put to achieving others' ends. In the New Zealand health sector the use of allies to state and restate 'facts' and the actions of government to curtail or simply avoid consultation are illustrative of such efforts to keep existing supporters in line. To ensure as far as possible that contrary views are not encouraged to surface or are drowned out by the chorus of supporting rhetoric.

Government has sought through its own agencies, and through the use of consultants, to advance ideas of the inefficiency of the existing health service institutions and question the ability of existing staff to manage without more 'relevant' accounting and other information on the present allocation of resources. Other institutions including the Business Roundtable and Institute of Directors have sought to promote similar views (see Boston and Cooper, 1989, Roper, 1990a, 1993).

The reliance on independent, contracted consultants, which had developed since the 1984 change of government continued under Helen Clark, who replaced Bassett as Minister of Health, with various reviews conducted by firms of accountants including Coopers and Lybrand. The Green and White Paper was widely criticized as under the influence of the New Zealand Business Roundtable and CS First Boston (Blank, 1994). Professor Patricia Danzon, invited to New Zealand by CS First Boston, produced recommendations (Danzon and Begg, 1991) that are clearly reflected in the health reforms initiated by Simon Upton. CS First Boston were subsequently commissioned by the government to advise on aspects of the reform process.

The use of outside consultants might well be seen as an attempt to avoid capture by traditionally potent health groups. The replacement of health sector interests with business sector interests that has taken place is still unstable. The effect of the activities of such lobby groups has been to effectively persuade the New Zealand public of the necessity of seeking a new approach to the provision of health services. Such efforts are not always entirely successful, but do channel the views of the health sector in a particular manner. People are encouraged to regard health institutions as inefficient and ineffective, even though they may not accept all the proffered policies which the government has promoted to address this.

Public consultation has been successively curtailed in the last decade.

consultation on social policy has moved from being a pre policy-making activity to being a post-policy-making activity. Instead of explicitly initiating public debate before the policy is made, public relations efforts are used to educate the public or to sell the policy at the implementation stage. (Blank, 1994, p.135)

Blank argues that the move away from accepted processes such as consultation are potentially damaging for a society such as New Zealand. With adequate funding of health in doubt, it is possible that, the majority might opt to oppose funding of care for high users and target health resources into those areas of health care which better fulfil their needs. A referendum, to the determination of health policy, though intuitively attractive may be inappropriate because of the complexities of health care (Seedhouse, 1993, p.75). The dramatic change that we have seen would probably have been impossible if the process had been open to a broad public consultation process (Ibid, 1993). The curtailing of public debate may be seen as a consequence of the adoption of machinations behind the scenes. The building of networks of allies, the use of rhetoric, which are features of the translation process recognise that the actions of policy makers may directly and indirectly work against open public debate. Specific operational goals have the political liability of being easily attacked by critics.

Despite major policy changes there remains considerable uncertainty as to how far the reforms will go. This uncertainty might to some extent be deliberate, in order to ease a cynical public into more radical changes, but it is more likely that it arises because specific long-term policy goals were not fully formulated prior to the implementation of the reforms. (Blank, 1994, p.148)

Blank indicates that without such long term indications of the goals of the reform process evaluation is problematic. A lack of clear goals is perhaps a feature of the rhetoric of market based reforms, since it is up to the market to provide the best solutions. The best examples of international health care systems all exhibit a liberal degree of governmental regulation. Health care is so critical to our society that such clarification is avoided at great risk. There are a number of major questions including: the role of competition and private enterprise; the future of public hospital facilities; how will the core services debate develop and the role of private funding and insurance⁵ (Blank, 1994, p.149)

Other commentators have questioned the direction of the reforms, though such views have had very little general exposure.

... the reforms are geared towards the secondary sector whereas it is in the primary sector that there is

the most potential for efficiency gains. The appropriate reform of general practitioner care will lead not only to savings in the delivery of general practitioner care but, because of the special role of general practitioners as gatekeepers, also result in savings in pharmaceuticals, laboratory, and secondary care costs. (Flood and Trebilcock, 1994, p.41)

That some aspects of the reforms originated in haste is evidenced by observations of developments since the reforms were first announced and by the comments of senior managers within the sector.

We all sat there on December 17th to listen to the announcements....which said there will be general managers in all these government departments..... Then the last sentence was that these changes will also apply to Hospital Boards and the Area Health Boards... At the very last minute.. allegedly the Director General of Health did not know....the state Services Commission had written up the Act ... at the eleventh hour (in the last couple of days) somebody said what about the health services. First version of the bill was a bit of a shambles since the health sector had been tacked on, 54000 employees on the end of a bill originally aimed at the state sector's 47000... doubled the scope at the last minute. A lot did not tie up with what they were saying about chief executives of government departments... But that has, dare I say it, all been sorted out. (Seminar by Garlick, General Manager, Waikato Hospital, 12th October, 1988)

Though such opportunism may seem undesirable this is by no means certain. Latour tends to suggest that opportunism is indeed a crucial element in the successful development of ideas and especially in the convincing of others. In this respect the government and Treasury might be seen as taking an opportunity or seizing a moment at which it appeared the New Zealand public were susceptible to reform of the Health System, or more cynically were too shell shocked and apathetic to respond as 'dissenters'.

6.5 Health Reform: The Translation and Inscription of Medical Practices

6.5.1 The Ministry of Health: The Use of Inscriptions to Enable Action at a Distance

The powerfully constitutive role of accounting to provide 'accurate and reliable' inscriptions, to be able to represent events and activities in numeric terms provides a crucial tool, which enables the accumulation of knowledge at the centre. In this manner 'centres of calculation are made possible (see discussion of the role of Treasury in policy formulation Chapter 5). In this instance the use of inscriptions is rather different to that which we discussed in relation to the Core Services Commission. The CSC was engaged in a project which sought to convince others of the need to view health services and how they might be accessed differently. The Ministry of Health and related institutions such as the Crown Companies Monitoring Unit

(CCMAU) and the RHAs are all very much implicated in the accumulation of facts. Only in this way can these remote institutions intervene in the activities of other health organisations and each other. The RHAs and Ministry have access to a great deal of common information on the activities of the CHEs, and more general data on national and regional demographics and health statistics. The accumulation of this information has been given very great emphasis in the health reform process. Such statistics are required if the health system is to be managed, if it is to be directed at a distance.

The Ministry of Health (Directions for Health, 1992, p. 7) reported very little information on the health status of New Zealanders. Steps have been taken to improve this by collecting information on a broad range of indicators (Ministry of Health, 1995).

According to the Review Committee on Health Statistics 'a measurement of the overall lifetime oriented health of an individual', is required to assess health status (1992, p. 17). Typical measures of health include mortality, morbidity, and disability, as well as social and mental well-being. Measures may be relatively objective statistics, of procedures performed, or subjective measures of individual health. Other closely related factors are also relevant in measuring health status. These represent a combination of 'lifestyle' and social factors. A number of these factors, identified by the Review Committee, are being used in the process of monitoring the performance of the four RHAs (Ministry of Health, 1995). The indicators of health status, that are available from New Zealand, that are suitable for international comparison give some cause for concern⁶.

In spite of claims of devolution, we see an increasingly powerful Ministry of Health. In spite of its description as a policy adviser to government, we see active involvement at all levels of health planning. (Pezaro, Chairman, NZ Medical Association, January, 1995)

It is clear that the Ministry, remains in control, the "obligatory passage point", at the centre of the network of the public health system, despite the "market" reforms. It is the accumulation of inscriptions of health outcomes and related health activities that enable the Ministry and CCMAU to monitor the performance of the 23 CHEs. Though such numbers are of course only a partial representation of the operational actions within complex organisation they are sufficient to enable 'action at a distance'. Through the manipulation and aggregation of such data convincing inscriptions can be prepared which enable, many and various, comparisons of institutions to be made. In consequence those at the centre can be seen to have more information than those at remote nodes of the network. Information is fed continuously to the

centre via mechanisms such as casemix and other accounting reporting systems, until the centre is able to represent on paper or in a computer all those remote sites.

6.5.2 The Core Health Services Review: The Use of Inscriptions

This depiction (see Figure 6.2) of the relative cost of differing health treatments is a powerful illustration of the use of inscription. Here a simple illustrative device was combined with the available accounting data to present a powerful picture of the trade-off between alternate types of medical treatment.

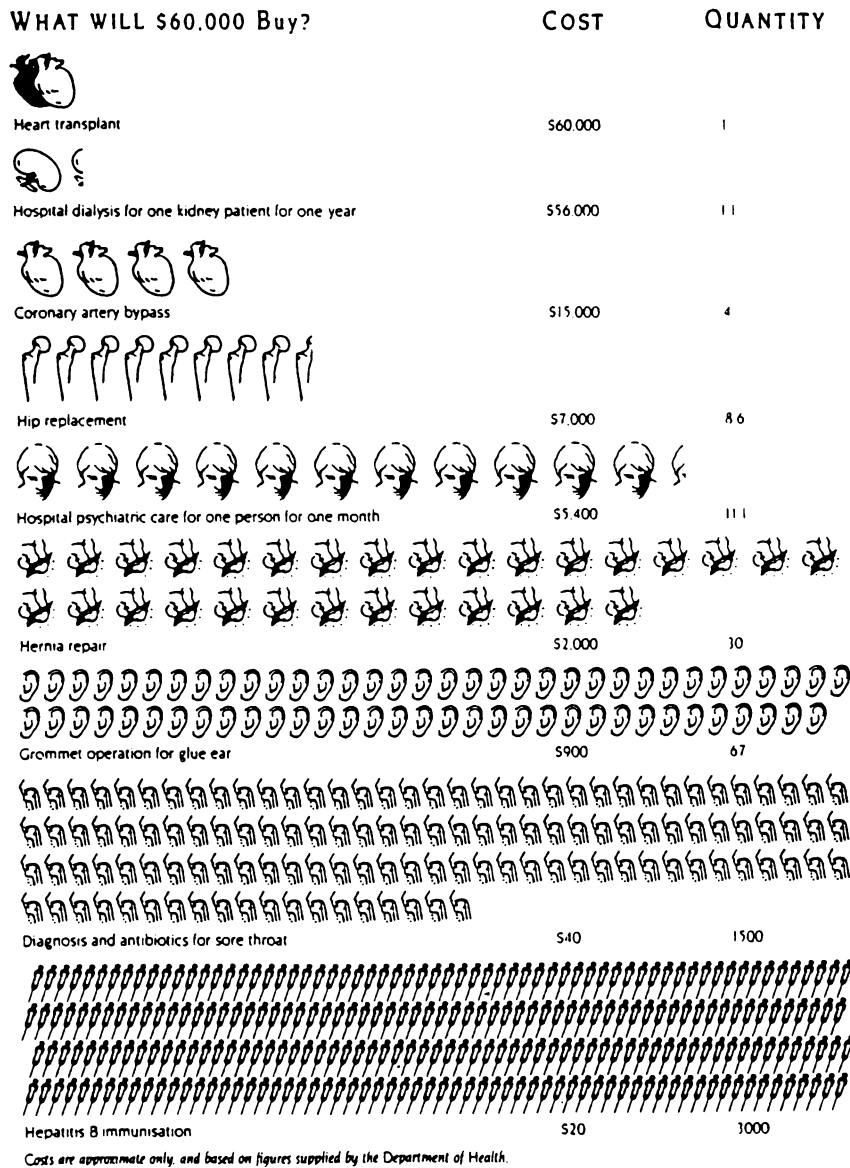


Figure 6.2: Trade-Offs In Health Care Allocation

Source: CSC, 1992a. p 10.

Particular emphasis is apparent in the stark contrast among the relatively high tech areas of treatment such as organ transplant compared to other rather simpler types of clinical treatments. The message was made most clearly, inscription and accounting combining to deliver a representation of the choice which it was intended the public might make, or at least be prepared to support. It was precisely this kind of procedure which would be necessary were a list of core health services to be established. But perhaps of even more moment is the ability of such inscriptions to bring apparently technical issues to public awareness. One might suppose that such devices could of themselves persuade people to support the rationing of some resource intensive services, effectively making the political decisions on rationing to a core of health services easier.

Ostensibly in order to avoid the ad-hoc nature of rationing via supply side measures the Minister proposed to develop a strategy designed to define the services that the public health care system ought to provide (Budget Brief; 1991, p.9). A list of core health services would provide a description of what health care providers must deliver. In the absence of such a list the rationing of access to health services has occurred through fixed budgets, partial payment for services via user charges, and queues (Upton, 1991, p. 76).

In the past, rationing has been done informally and often without public scrutiny or control. Defining a set of 'core health services' more explicitly will help ensure that the services the public believe to be the most important will be provided. It will also acknowledge more honestly that there are limits to the health services we can afford (Upton, 1991, p.80).

The Core Services Committee is seen as a most ambitious move because

[t]he committee's definition of core health services' will play a key role in determining the service which purchasers will buy on our behalf. Equally, they will provide a clear indication of those services which the public health system will no longer offerThe boundaries of public health care will be more sharply defined and, consequently, the impacts of increased or decreased funding on those boundaries will become more apparent . (Budget Brief, 1991, p.6).

Emphasis in government explanations to date has focussed on the use of an explicit core to define more clearly the range of services to which everyone is entitled. But core health services will also define the 'ceiling' on the government's obligations to assist people to gain access to health care (Upton, 1991, p. 76). In theory defining the core identifies the priority health services while also acting to contain health budgets.

The government established the National Advisory Committee on Core Health and Disability

Support Services (the Core Services Committee or CSC) in 1992. The initial mandate was to find out what services New Zealand citizens think are most important, and to make annual recommendations to the Minister of Health concerning which core services should be purchased. The CSC is also to recommend periodically, any necessary changes to the processes by which the Minister is advised on core health and disability support services (CSC, 1992a, p.5).

Many submissions to the CSC from health professionals favoured greater accountability and a more explicit structure of prioritizing. These people viewed the definition of core health services as a useful step to that end. Since the imposition of global budgeting in 1983 rationing has been in effect in New Zealand (Blank, 1994). This has taken the form of waiting lists, and restrictions on purchase of equipment. Complaints that the core strategy was a subterfuge for explicit rationing were still raised (Turnbull, 1993a). Oregon's rationing plan⁷ (based on a numerical listing of priorities), which had received considerable interest in New Zealand government circles, also attracted some heavy criticism.

Submissions gave consistent emphasis to quality rather than quantity of life. The need for a shift in resources to improve basic care in the community and away from services such as CAT scanning, MRIs and transplant surgery was regularly a feature in the submissions.

In principle, only limited public funding should be made available for: the services involved in the prolongation of life of the aged or the terminally ill, or those with little prospect of future human dignity; and overzealous neo-natal care....We may need to cut out (a) heart transplants in public hospitals (b) the rescue of babies at impossible ages, with likely ongoing costs to the nation forever.... (CSC, 1992c, p.55).

Primary care was heavily emphasised over secondary care. Medical and surgical interventions are seen as being given far too much emphasis and resource at the expense of flexible support services of a primary care nature. Questions were often raised in public submissions of the cost effectiveness of newly introduced high technology interventions.

The public expressed the firm view that the relative cost-effectiveness of services must be demonstrated if they are to be publicly funded. The Committee agrees that the effectiveness and benefit of all services must be demonstrated if they are to remain in or be added to the core (CSC, 1992c, p. 63).

In 1993 the goal of the Committee was to seek to establish a community consensus. This proved more and more elusive as the reality of exclusion from the core became apparent. A compromise was eventually reached which consisted of choosing among a variety of options

for defining the core: a general positive list, a detailed priority ranking, or a negative list. A list based on broad categories of services found strongest support⁸.

A core list based on a priority ranking of services, was rejected by the CSC as complex, time-consuming, costly, and divisive (CSC, 1992b, p.14). In addition to the large administrative commitment for its development and enforcement the CSC was also keenly aware of the divisiveness such a ranking would bring to an already controversial endeavour. In what some regarded as a capitulation the CSC recommended that the core be defined as comprising all the currently publicly funded health and disability services.

In short, our present health and disability support services are the product of decades of reasonably commonsense and principled decision making. By and large, the current core reflects fairly accurately the values and priorities of several past generations of New Zealanders (CSC, 1992c, p.63).

Though, ostensibly, the CSC changed little in the delivery of public health care services, it does establish a mechanism for explicitly rationing⁹ medical resources. More particularly the CSC and its activities produced a debate which facilitated the introduction of a new language into the discourse of health in New Zealand. The effect of the consultation processes in which the CSC was involved and the reporting of its activities and reports through the media led in large part to the acceptance of a business oriented, cost conscious, rhetoric into the health discourse. It may be that the CSC has played a much more central role in supporting a change in attitudes among people that has facilitated the reform process.

6.6 Concluding Comments

It is by now very clear that the present health reforms are placing a great deal of emphasis on the power of competitive forces to enable the CHEs particularly, which is after all where most of the resources are expended, to operate, if not as "successful and efficient business", then at least with increased success and efficiency. Moreover these policies are being followed for the long term.

People often ask me when the reform process will be finished. I think the nature of medicine and growing expectations mean that we will always be managing the process forward...[the] vision revolves around cost control...in the past the health system was managed on an ad hoc basis in which decisions were made without regard to cost-effective and spending priorities were determined in an inconsistent way. (Shipley, Minister of Health, Herald, 1996, January 30th)

Though the policies are certainly open to criticism, it is as yet not clear either how effective the reforms process has been, nor at what cost. Indeed barring major catastrophes it is likely that evaluations will continue to be equivocal, since the very nature of the reform process means that reliable comparative information tends to cease to be available, while international comparisons are fraught with difficulty. On the other hand it is possible to identify current and perhaps potential concerns and doubts over the impact and effectiveness of the reform process. A number of reservations and indeed condemnations have been expressed by dissenters and commentators on both sides of the political spectrum. Some arguing that the reforms are insufficiently of a 'full blooded' market nature, while others firmly in favour of a less market, and profit oriented system. In this regard a recent Economist article (1995, December) on the management of the public sector placed much stress on the concept of market prices and profit as signalling mechanisms, rather than ends in themselves. It is possible to argue that even in the certainty of imperfect markets and information of the health sector some benefits may still be obtained from the use of profit measures and the adoption of accounting and other management performance measures.

The next chapter marks somewhat of a break with the past two chapters. This is in some ways more apparent than real. Latour (1987a, 1993 and 1997) argues that there is a tendency in more conventional analyses of the social mixtures which constitute our society to assume a significant difference between explanations of "local" contexts and more "global" circumstances. Latour maintains that this ought not to be the case. He insists that any differences between the local and the global should be seen as "differences of scale" not "differences in kind". With this clearly in mind the next chapter does begin that part of the thesis which addresses much more directly than anything I have written earlier the local issues within the research site.

Chapter 7 provides an overview of the implementation of Clinical Budgeting at the hospital. The purpose of this and the following three chapters is to provide an explanation and understanding of developments in casemix related information systems which have been the focus of my empirical research. The themes will be explicated within each chapter using theorising drawing primarily upon the sociology of translation (Latour, 1987a), aspects of which have been discussed more deeply in chapters 3 and 4.

Notes

1. New Zealand became the first country in the world to develop a public hospital service following the Social Security Act of 1938 which introduced a comprehensive state health service. The Act provided a commitment to universal access to health care for all citizens. Following the Act a large increase in public funding occurred (see figure 6.3 below). The 1940s saw the introduction of universal subsidies for general practice and other medical services and

... by 1947, the thrust to put a universal, and predominantly tax-funded, public health service into place was largely completed, although new subsidies continued to be added in later years on an ad-hoc basis (Ashton, 1992a, p.148)

The government share of health care funding doubled between 1938 and 1960 (Muthumala and McKendry, 1993, p.28). The principle of access to health care based on need, not on ability to pay was firmly established. A relatively young and healthy population, and strong economic growth gave New Zealand a sound and equitable national health care system. The midseventies, saw a downturn in economic growth partly a result of 1974 oil crisis. Some incremental change followed in the late seventies. Health spending had increased from 5.1 per cent to 7.2 per cent of GDP between 1970 and 1980.

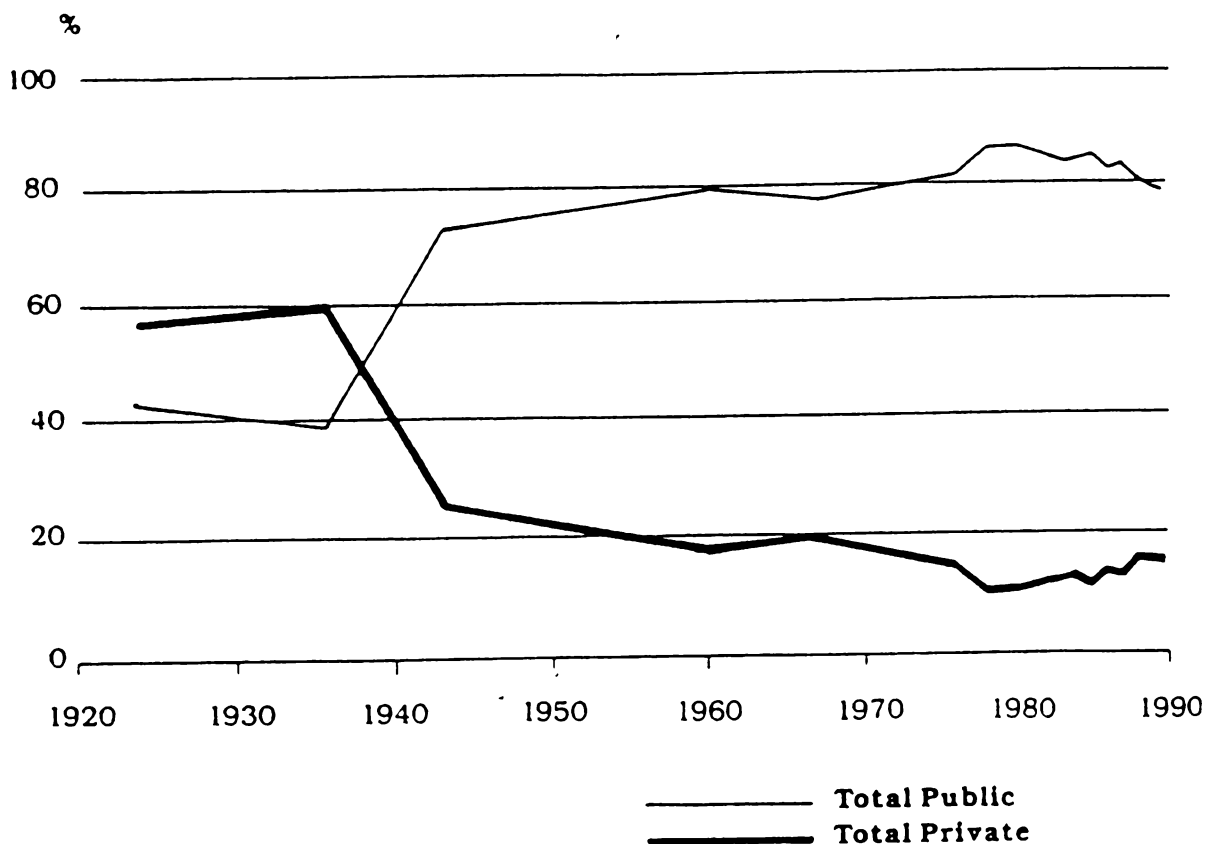


Figure 6.3: Long-Term Trends in Sources of Health Care Funds
(Source: Muthumala and McKendry, 1993, p.28)

During the 70s access to primary care was gradually restricted as a result of a decrease in the real value of the General Medical Services benefit from around 75 per cent of the total fee to less than 20 per cent (Ashton, 1992b, p. 149). This provided an incentive to use hospital services, which were fully covered, instead of primary care. The Area Health Boards Act of 1983 was a response to perceptions of weak accountability mechanisms, increased hospital expenditures, and lengthened waiting lists.

In recent years public health spending has shown a significant increase (McLoughlin, 1996) after being reasonably stable for several years in the late 80s and early 90s (see table 6.1)

Table 6.1: Government Health Spending 1980 - 97

Year	Dollars Millions	Year	Dollars Millions
1990	4191	1980	1216
1991	4312	1982	1695
1992	4006	1984	1953
1993	4065	1985	2072
1994	4254	1986	2519
1995	4745	1987	3169
1996*	5095	1988	3681
1997**	5303	1989	3996

* Estimated actual **Budget figure

(Source: Muthumala and Mckendry, 1993, p.23
and 1996 New Zealand Government Budget Estimates)

2. The data in Table 6.2 below raise issues over both access and efficiency, the lack of clear national health priorities and the tendency of boards to favour their own institutions all gave rise to serious concerns. Expenditures on public health and preventive measures were also reducing.

Table 6.2: Variation in Resource Distribution and Performance Indicators Across AHBs

Indicator	Minimum	Maximum	Mean
A Resource Distribution			
1.Expenditure per capita	\$624	\$1,174	\$781
2.Beds per 1000 population	6.9	19.1	9.1
B Performance Indicators			
1.surgeries per 1000 population	13	82	55
2. Day patients per 1000 population	36	172	86
3. Outpatients per 1000			

population	842	1819	1249
4. Cost per bed day	\$226	\$634	\$418
5. Average length of stay in days	7.7	30.2	13.3
6. Number on waiting list per 1000 population	14	26	18
7. Qualified nurses per occupied bed	0.7	1.3	10
8. Doctors per occupied bed	0.05	0.29	0.18

Source Danzon and Begg, 1991, pp. 25-6

3. According to Flood and Trebilcock (1994) the reforms can be divided into two areas:

Demand Side Reforms

- 1 A regime of targeted user fees that included introducing, for the first time since 1938, partial user charges for public hospital care.
- 2 The fourteen Area Health Boards (AHBs) were dissolved. Replacing their predominantly elected members by the government appointed boards of the four new Regional Health Authorities (RHAs). The proposals provided for the separation of the AHBs' purchaser and provider roles in the new RHAs.
- 3 The (RHAs) were to act as purchasing agents, funded by government, of primary and secondary care for illness, accident and disability suffered by citizens residing within their respective regions.
- 4 Provision for the eventual establishment of private health care as alternatives to the services offered by the RHAs to which individuals could shift their allotted portion of government funding, which would otherwise be spent by an RHA.
- 5 Public consultation by a government appointed committee to define a list of "core health services" that must be available without charge or at "affordable" prices. RHAs and private plans must purchase core health services as a matter of priority for those individuals for whom they are responsible. This body quickly became known as the Core Services Committee (CSC).
- 6 The separation of responsibility for the purchasing of public health services from other types of health services, and the establishment of a Public Health Commission to purchase public health services from public and private providers. This function was devolved to the RHAs in 1993.
- 7 The transfer of responsibility for the purchasing of disability support services from a variety of government departments to the RHAs.'

Supply Side Reform

- 8 The restructuring of public hospitals (approximately 100) into 23 special government owned companies known as Crown Health Enterprises ("CHEs"). CHEs were to compete with each other and private secondary care providers for supply contracts with the four RHAs. This was to operate primarily through a quasi market contracting process between the RHAs, as purchasers, and health providers, initially predominantly the CHEs.
- 9 The 1991 proposals for reform provided that, subject to economic viability and government approval, small hospitals would be run as community trusts.

(adapted from Flood and Trebilcock, 1994, p.14)

Demand side analysis

In addition to the 1991 structural reforms, the National government introduced a regime of targeted user charges, which abolished subsidized general practitioner visits for many New Zealanders, increased pharmaceutical charges and introduced for the first time since 1938 partial user charges for care received in public hospitals. This latter reform was dropped after major public opposition .

There had been a steady erosion in the relative value of government subsidies for visits to general practitioners (GPs), since 1941, soon after their introduction. By 1990, the real value of the General Medical Services Benefit had fallen on average to less than 20% of the average total GP fee, from around 75% when it was first introduced. Targeting of subsidies and charges for general practitioner fees and pharmaceutical costs on the basis of income status survived the public furore. In order to avoid paying the highest rate of charges for these services, "low and modest income earners" must now present an entitlement card--the "Community Services Card".

The introduction of user charges is easily justifiable in simple economic terms. It is argued that a "moral hazard" problem arises if health services are free--patients will consume services that are not cost-efficient and consume more services than needed, increasing health care expenditure for little apparent benefit. The introduction of part or full charges should operate as a rationing mechanism, serving as a proxy for the real cost of health care services. As a consequence patients ought to restrict their demand for health care services to those they value the most. Moral hazard is, however, ameliorated in the health services market by virtue of the information asymmetry factor between patients and providers. In most cases patients are in the hands of the physician and will tend only to consume those health services advocated by his or her physician. This leads to another perhaps more serious problem of physicians tending to increase demand by influencing patients decisions.

Another problem arises with third-party payers (whether private insurers or the state), since under these circumstances there is no incentive for the patient to choose lower cost treatment, and in any case, lacks the knowledge to make an informed choice, and moreover, providers have no incentive to choose the most cost-efficient treatments for patients. User charges do not affect this phenomenon

as most of the costs of utilization are passed on to private insurance companies.

It has been argued that as patients are not able to initiate many expenditures, ie, referrals, hospital admissions and prescriptions, that patient-initiated abuse cannot comprise a large proportion of total health care expenditure. Stoddart (1993) notes that, in Canada, physician services make up about 16-20%, of all health care expenditures, and a patient may initiate access to about half of those services. Some of those will be return visits (initiated by a practitioner) and that most of the patient-initiated first visits are in response to a genuine need. They speculate that the percentage of total health care spending which may be related to patient-initiated abuse is less than 1%.

User charges are also likely to result in a fall in consumption of necessary as well as unnecessary services because patients do not have sufficient information to make correct judgements about service needs (Stoddart 1993). A RAND Corporation study (Lohr et al, 1986) reports patients most likely to reduce consumption of both necessary and unnecessary services are those that are "price-sensitive", who are most likely to be the poor. Stoddart et al report the introduction of a flat fee user charge of Canadian \$1.50 in Saskatchewan. Between 1968 and 1971 per capita use of physician services fell by over 6%. For low income people the reduction was around 18%.

Since 1941 New Zealanders have had to pay an increasing proportion of the cost of a visit to a general practitioner. These user charges for primary care, impacting as they seem to do mostly upon the utilization of health services by low income groups, explain New Zealand's poor record in securing equal access for different socioeconomic groups and the relatively poor health status of Maori. (Flood and Trebilcock, 1994, p.16)

In addition user charges for general practitioner care provides an incentive for poor patients to delay seeking treatment. This may result in the need for hospitalisation if the ailment or injury worsens as a result of the delay in seeking treatment. While the government can reduce health expenditures in the short term through user charges, it must consider the impact of user charges in terms of allocative efficiency. User charges may well increase total expenditure on health care and may reduce the effectiveness of the system. Perverse and inefficient incentives may be produced within the user charges system. Patients still have an incentive to utilize hospital care which is free to the patient, but which incurs an average real cost of NZ \$600 per day, as an alternative to seeking GP care for which the patient must pay.

A gesture was made to reduce the burden of user charges to the poor. The population was to be divided into three income categories: low (Group 1), modest (Group 2) and high (Group 3). It should be noted that although "low and modest" income earners now pay lower user charges than "high income earners", all patients no matter how sick or poor are required to pay a proportion of the cost of a visit to a general practitioner and for pharmaceuticals. "High income earners" include any family not eligible for family support, most of the elderly earning private income and single people earning over NZ \$17,500. Under the new regime these "high income earners" receive no subsidy with respect to the cost of visiting a general practitioner (unless a child or diagnosed as chronically ill in which case a partial

subsidy is paid) and have to pay up to NZ \$15 per prescription item (unless diagnosed as chronically ill in which case the charge is NZ \$3 per prescription item) up to a maximum of 20 prescription items per annum (Ashton, 1992). It has been argued that the criteria for qualification for the category of "high" income earners is set too low (Ashton, 1992). Problems of access and questions of distributive fairness arise when a single person earning NZ \$17,500 pays the same for health care services as a single person earning NZ \$60,000. Private health insurance in New Zealand has grown in recent years. It was estimated that 45% of the total population had private insurance by 1986 (Raffel and Raffel, 1987). This is claimed to have had negative distributional consequences, whereby, while about half of households with incomes in the top quarter are covered, fewer than 20% of those in the bottom quarter have private insurance. Consequently while user charges are likely to have a small impact on the purchasing decisions of those on higher incomes (with insurance), the main impact will be on those on low incomes, and particularly those who cannot afford private insurance and who do not qualify for the Community Services Card.

Serious consideration should be given to abolishing user charges for general practitioner care. The focus should not be upon attempting to restrict demand for health services by user charges, but to provide incentives for providers to choose the most cost-effective treatments through more innovative reimbursement arrangements than the current fee for-service regime. (Flood and Trebilcock, 1994, p.17)

4. In addition the Act (Health and Disability Services Act, 1993) specifies that every Crown health enterprise shall have the following objectives:

- (a) To exhibit its sense of social responsibility by having regard to the interests of the community in which it operates:
- (b) To uphold the ethical standards generally expected of providers of health services or (disability services, or both, as the case may be):
- (c) To be a good employer:
- (d) To be as successful and efficient as comparable businesses that are not owned by the Crown

5. Blank (1994) argues that there remain a number of uncertainties about the health reforms. Such as the role of competition and private enterprise. How will provider competition be assured, particularly outside the major urban centres? How is competition in the health insurance market to be encouraged? Will RHAs retain full control of funding?

2/ Will social insurance be made compulsory?

3/ What is the future of public hospital facilities. Will high technological specialized care be shifted to the private sector? Does the emphasis in the core services mandate upon preventive medicine, primary care, and community services, mean that an increasing number of high-technology procedures and treatments will be available only to those with private insurance? To what extent will equity, rather than ability to pay, figure in these changes?

4/ What is the target for public versus private funding? Will limits will be set on the user charges covered by private third-party payers? Will co-payments be required, as in Japan, from all users, private as well as public? Given a portion of health costs to be publicly funded what protection will there be against cross subsidisation?

5/ How far will core services be reduced? How will the definition of core services deal with the inevitable conflicts between various segments in society, in particular the ageing non-Maori population and the relative young Maori/Pacific Island population? How will strong pressures for inclusion of expensive, dramatic, and potentially life-saving procedures be countered?

6. Table 6.3 shows comparative data on neonatal (less than 28 days), postneonatal (28 to 364 days), and infant (less than one year) mortality rates. The postneonatal death rate in New Zealand is the worst of the 20 countries in this survey, while Maori rates are almost double those of the rest of the population. Some of the New Zealand data have improved since these data were collected, though this may be the case in other countries also.

Table 6.3: Minimum National Health Status Indicators

DIRECT MEASURES

A Objective Measures

1. Mortality

- infant mortality rate
- prenatal mortality rate
- neonatal mortality rate
- post neonatal mortality rate
- standardized mortality ratios
- age, ethnicity, sex and cause of specific mortality
- life expectancy by ethnicity
- age specific life expectancy
- years of potential life lost

2. Morbidity

- prevalence/incidence of diseases (international classification)
- number of reported cases of AIDS
- estimated numbers with AIDS antibodies
- incidence of sexually transmitted diseases
- psychiatric morbidity
- proportion of specific mental disorders
- hospital morbidity rate
- incidence of accidents, poisonings, drowning by age
- GP consultations by clinical condition/problem
- relative frequency of leading causes of morbidity
- dental morbidity (percentage of population with retained tee

3. Disability

- incidence/prevalence of blindness
- incidence/prevalence of deafness
- measurement of independence in activities of daily living
- percentage population experiencing different levels of long-term disability by age and sex
- rates of congenital abnormalities
- prevalence of disability by cause

4. Subjective Measures

- Social and mental well-being
 - self-rated health
 - percentage independent and healthy over 65 years
- (source Blank, 1994, p.143)

Statements in the Gibbs Report, tend to dismiss the importance of GDP rankings. Other commentators (Danzon and Begg, 1991, p.24) reject the contention that New Zealand's relatively low ranking is evidence for maintaining the *status quo*. Control of measurable costs, they argue, is meaningless without a measure of outcome. Such simplistic comparisons, of costs across countries is inappropriate without comparing benefits, and implicitly assumes that benefits are uniform. This approach takes no account of differing spending patterns, as between primary and secondary, nor of efficiency differences across countries. In order to utilize comparative expenditure data of this type, it is essential, to develop more precise measures of health outcomes (Ministry of Health, 1995).

7. Other Core Services Approaches

The concept of defining a core of health services as some minimum level of provision has attracted interest in a number of countries. Some of these are discussed briefly below. Again these developments are best seen as approaches to the rationing of health services in an era of budget pressure and increasing availability of high tech and expensive health treatments.

1/ Oregon generated a list of prioritized health care services so as to provide Medicaid services to those persons on public support. The criteria used to rank over 700 diagnostic and treatment categories were: (1) cost of the procedure; (2) improvement in quality of life; and (3) the number of years the improvement is expected to last. Treatments were originally put into broad categories, and efforts were made to ascertain community opinion regarding their relative importance. Procedures to be funded in a given year will depend on the total amount budgeted by the state legislature, thus explicitly tying specific treatment to a level of health care funding. It should be noted, however, that the Oregon scheme, unlike New Zealand's, is not intended to frame a comprehensive health service for the entire population, but is, rather, designed to make better use of limited state funds to cover health care for the poor.

2/ In 1992 the Dutch government created an advisory committee to establish guidelines for a set of core health services. The committee recommended that in

order for a service to be publicly funded, it should meet four criteria. First, it should be regarded by the community as necessary care. Second, the care had to be demonstrated to be effective. Third, it had to be efficient; and fourth, the care had to be of a kind that could not be left to individual responsibility. In approaching their task in this manner the committee failed to provide a means of balancing one area of necessary care against another, nor did they devise specific mechanisms for prioritizing health services.

3/ Canada Health Act of 1984 specifically excludes most adult dental services, optometry, physiotherapy, osteopathy, ambulance services, dietetics, hearing aids, psychology, pharmaceuticals, and other ancillary services, except when provided in hospitals. Furthermore, as budgets tighten, descheduling of services is undertaken through negotiation with providers.

8. The detailed specification of conditions and treatments (e.g. the Oregon list) was not favoured. This approach provided a number of potential benefits, and at the same time a greater prospect of some progress. The more general list would give the flexibility to modify what treatments might be included as health needs and technology changed. Regional variations could also be incorporated in the chosen approach, the list would now be easier to develop and administer, and also give more scope for the exercise of clinical judgement. There were potential drawbacks also. The failure to define explicit criteria which might be imposed on the health care community or the public would increase uncertainty and encourage lobbying of individual issues which would likely be emotive and politically difficult. A negative list is also being created, to identify those services that will be excluded from core health funding. This list would concentrate mainly on the high-cost/high-risk procedures such as major organ transplants, as a response to the need to contain expenditure.

9. Rationing of high-cost procedures on the basis of lifestyle choices was recognised prior to the implementation of the current health reforms. In 1992 Green Lane Hospital had announced a policy of eliminating smokers from its new lung transplant programme.

[it] would be quite unacceptable to perform transplants on people who have ruined their lungs by smoking when the dangers of that are so well known.(most transplant recipients will be young people who are victims of diseases)...through no fault of their own (Christchurch Press, 1992, p.6).

Heart and liver transplants are subject to similar policies, while coronary artery surgery may be denied to persons who continue to smoke (Turnbull, 1993b).

The core services initiative could face real problems when services which have traditionally been supported are eliminated from the list. Core services will also have to withstand pressures for dramatic, life-saving, interventions for specific individuals, such as the case of the patient initially refused dialysis in Auckland (Herald, January 12 , p.1, 1995). Inequities between those with private insurance and those without are likely to be magnified by a narrowing range of core services.

The core approach is susceptible to similar problems to other mechanisms designed to limit the availability and access to resources. Incentives are established for clinicians to bend or interpret the core to 'protect their patients'. To ensure treatment for their patients, some physicians will deliberately manipulate ambiguous diagnoses to fall within the core. Borren and Maynard (1993, p. 19) identify this as 'core creep', deliberate misdiagnosis to obtain treatment of conditions outside the core. The common use of value judgements, and the medical ethics, will make it very difficult to distinguish such activities. Reconstructive surgery and cosmetic surgery often comprise similar if not the same procedures. Clinicians are likely to exploit definitions in such areas to treat patients (Ibid).

Another danger is that the system may lead to greater inequalities. Wealthier individuals will be allowed to 'top off' their state allocations (Borren and Maynard, 1993, p. 19), with private insurance, while those dependent on state funding will have access to a minimum set of core services. Campbell and Gillett feel in contrast that the adoption of the core will help to reduce the effects of unbridled competition.

the major constraint upon the inequality of access which could result from an unrestricted competition for "profitable" patients will be the requirements laid down by the core (1993c, p.61)

The core must reflect community values. Seedhouse stresses the need to clarify the basic issue, what sort of society do we want, 'one that maximizes the quality of life for the most productive or one that brings the weakest closer to the level of the strongest (Seedhouse, 1993, p.71). The former is likely to focus on 'high-tech' medicine, while the latter would emphasise primary health care and community services. Without this:

it is not clear that everyone should be allowed equal access even to a core set of health services' (1993, p. 71).

If the weight is given to public submissions to the CSC then there is little doubt that the emphasis will be on better provision of resources for the greatest number.

The autonomy of some professional groups is threatened by the definition of a set of core services (Campbell and Gillett, 1993c, p. 58). Members of the medical profession have, in the past, been granted considerable latitude to make professional judgements within their areas of competence. The explicit allocation of resources occasioned by the core process is likely to conflict with this largely unfettered professional autonomy.

Professionals are likely to oppose a core services approach if they are not convinced of the fairness of the system (Campbell and Gillett, 1993c, p. 59). The process may be seen as strictly a case of cost cutting. Some professionals will continue their policy of outright advocacy for their patients, even if the core system is viewed as fair. In these circumstances it is essential that the definition of a core of essential services be reached by a:

combination of expert professional advice about the health outcomes of treatments and consultation with the community about which outcomes they believe appropriate (Campbell and Gillett, 1993c, p. 59).

Calls for substantial consultation with the public as well as health care professionals throughout the core services process have emanated from government also (Upton, 1991, p.75).

Chapter 7: The Construction of a Network at Health Waikato: The 'Towards Clinical Budgeting' Project

7.1 Introduction

This chapter provides an overview of developments at the research site. Some key aspects are then described in detail in the following 3 chapters. This section of the thesis, consisting of this chapter and chapters 8 through 10 will provide a series of descriptive case studies of aspects of the accounting system changes and implementation process at the hospital, Health Waikato (HW). Though each case has been constrained to a chapter length exposition they are presented here as closely and inextricably interrelated. The aim through the four chapters will be to draw out the implications of different aspects of the study. These chapters will enable the reader to see the impact of interdependencies and contingencies within the organisation upon the accounting systems and information technologies.

The two major health organisations in the Waikato at this time were the Midland RHA and HW. HW has had a presence in the greater Waikato region since the late nineteenth century. HW owns and operates a number of hospitals and services within a large geographical area in the central North Island. Much of the organisation formed the Waikato Area Health Board in 1989, but this organisation was disestablished following the passing of the Health and Disability Services Act 1993.

The necessity to imitate market forces by producing a quasi-market for health services was securely established at the national and regional levels. The replacement of the previous Area Health Boards with the new structure of RHAs and CHEs (see discussion in chapter 6) was to facilitate this.

Such a structural arrangement brought with it an unprecedented demand for accounting and managerial information at the level of individual health providers. In order to provide a meaningful proxy for a market in health services there was a need to produce much greater and more detailed cost and volume data on health activities than had been contemplated previously. Management placed considerable faith on the introduction of management systems

and techniques, which were to be modelled on those in the private sector. The problematisation of health at the level of national policy had been achieved with great success, but this ought not to be seen in isolation. The success of the health reform process was still to be very much dependent on the way in which the reform process might be effected and effective at the level of individual health providers.

The themes will be described and explicated using theorising informed by the sociology of translation (Latour, 1987a). The power of accounting in the translation (Preston et al, 1992) and inscription (Robson, 1992; 1993) of data, will be central themes in understanding the role of accounting systems as technology. It is this need to understand accounting as technology which necessitates my presentation of detailed descriptions of accounting systems. Such descriptions are necessary to provide the nonhuman elements of the networks I am seeking to explicate in this thesis.

Problematisation would need to be carried on at the local level within health organisations, in order for the reforms to enter the operational networks within hospitals and other institutions. Projects such as that which sought to establishing casemix accounting systems and clinical budgeting at HW were to become the focus of a process of translation, which sought to establish casemix technology within the hospital. Groups of staff would need to be convinced that casemix could provide a solution to the issues which had been problematised, or were soon to become problematised. In order for the process to be effected groups would be identified ("interestment") who might be persuaded to support the casemix implementation. These groups would be "enrolled" into the project, either in maintaining the system by providing data to it, or in using information from the system.

In order to keep the integrity of any system, and in order to maintain its objectives Latour also describes the need to ensure that as people are enrolled as allies within a system, they are also in some way encouraged to accept the system as is. This ultimate stage of the translation process is described as "mobilisation". Mobilisation is that part of the process which seeks to ensure that those enrolled into the projects are somehow channelled to ensure that they do not subvert the objectives of the system's principals.

The use of technology is particularly important here. It is often within the accounting or systems technology that constraints can be placed on the freedom of human actors to modify the system and alter the intended objectives. It is equally important to recognise that not all the

outcomes of changes in information systems or managerial structure and culture are or can be assuredly planned in advance.

The following sections will provide further analysis and discussion of the environment, practices and developments at the hospital. The next section will provide a brief background on the HW CHE. The following section will provide a description of the clinical budgeting project as it took shape at the hospital. Following this there is a section which introduces a number of the related system changes and implementations which were identified as being necessary by CHE management to enable the clinical budgeting system to operate. In the discussion section there will be a more theoretical consideration of the system changes at the hospital. This discussion will be informed by the empirical data from the intervening sections. Finally there is a brief concluding section.

7.2 Documentary Analysis: Background Health Waikato

This section relies mainly on the analysis of documentary evidence from the research site. These documents include annual reports (Annual Report, 1994; 1995) and internal reports dealing with the Clinical Budgeting Project (Implementation Plan, 1995). The Health Waikato Business Plan (1994) describes the hospital's "... core business as the provision of secondary and tertiary health services" (Ibid, p.2). It also states that Waikato Hospital, the regional base hospital in Hamilton, "... provides the most comprehensive range of health services, from a single site, in New Zealand" (Ibid). These services, include specialist health services for a wider geographic region, in particular: cardiology, oncology, mental health, trauma care, obstetrics and neonatal intensive care. Since the Health Services Act 1993, HW management has become increasingly concerned to establish what ought to constitute the core business of the regional health provider. Statements have been made both inside and in public (Waikato Times, December, 1995) about the need to identify the "core areas" of the organisation.

A concern to contract out elements of the activities which were inherited from the Area Health Board, is evident from a number of statements made by managers within the organisation (Interview with Director of Finance, 24th June, 1994, and Clinical Budget Project Manager, 1st July, 1994).

Table 7.1: Health Waikato Profile

Annual Operating Budget	\$250 million
Total Value of Assets	\$200 million
Total Resourced Beds	1590
Total Number of Staff	5240
Staff by Division:	
Medical and Elderly	1009
Surgery	868
Women's & Children	502
Mental Health	456
Primary and Public	943
Clinical Support	493
Support Services	745
Corporate Services	228

(source: Business Plan, 1994)

HW reported an operating loss of \$16 million for its first year of operation which was \$6 million less than budgeted for the year. The debt to, debt and equity ratio, of 24% was 28% less than budgeted. In cash terms, HW was close to a break even position for the year. Depreciation at approximately \$18 million is almost equal to the operating loss. Management of HW were concerned that an ongoing loss could cause, financial and operational, problems for the hospital if further government intervention were not forthcoming. HW's ability to invest in equipment and technology in future years could be in doubt. Debt which HW took responsibility for, upon incorporation, from the previous area health board has been transferred to the private banking sector. The Annual Report states that this will result in an annual interest saving of \$2 million.

The loss situation was forecast to take about 5 years to turn around. This situation has brought HW into the government run "Workout scheme". A number of major health providers were placed in this category and a consulting firm engaged to work with these providers to achieve a breakeven outcome within 2 years. Here again the role of accounting numbers, to provide information "at a distance", to the Ministry of Health and Treasury, provoked the move by officials at the Treasury to include HW in the "Workout" scheme. This activity was to add significantly to the pressure on managerial staff over about a 12 month period, during 1994/95, as plans and budgets were prepared and changed continuously in consultation with outside agencies, including the Crown Company Monitoring and Advisory Unit (CCMAU) and the consultants. It has been suggested that disagreements over the application of CCMAU and

Treasury suggestions for rationalisation during the Workout process led to the resignation of the Chief Executive Officer of HW (Waikato Times, 29th July, 1995).

The setting up of several of the larger CHEs as loss making organisations may well be seen as part of the problematisation process. This was one way of placing the regional health providers under some pressure to change, and certainly placed newly appointed managers under some pressure to produce "results". Several CHE, CEOs have left their positions citing, at least in part, problems in working with CCMAU and Treasury in the establishment of business plans which might move their organisations more quickly into break even situations (Herald, 7th June, 1996; Herald, 15th April, 1995). The following statement confirms a comment from Brian Pankhurst reported in a story in the Herald, 15th April, 1995, shortly after his "sacking" from one of the three Auckland CHEs.

Officials from the crown company monitoring and advisory unit had continually asked [him] for business plan "scenarios" which drastically reduced services - by up to \$40 million - to get rid of the Auckland enterprises's \$52 million deficit. (Interview, 6th May, 1995)

These attitudes which have been echoed by others were further confirmed in June, 1996. Dennis Pickup described the North Health RHA as "incompetent" and officials of CCMAU and Treasury as giving "disgraceful" information to government (Herald, 7th June, 1996). Such expressions as these from such senior managers indicate the pressure under which these "corporatised" health providers were placed by government officials. Not only does such activity indicate the extent of continuing government involvement in these organisations but is also illustrative of the effort to problematise the issue of profitability and efficiency through the use of accounting numbers.

The reporting of accounting and casemix information to the Ministry of Health and CCMAU clearly enables these institutions to "act at a distance" on other health organisations. The Workout Scheme kept accounting and other managerial staff under significant pressure. Budgets were presented, reworked and represented on a number of occasions at HW during the early part of 1995 as the people within the organisation sought to respond to demands for information from Workout officials to present a business plan showing a breakeven position within two years. "Workout" produced demands for further and much more detailed financial information to be provided by the health providers and funders and collected at the "centres of calculation", which CCMAU came to represent.

7.3 Towards Clinical Budgeting (TCB)

This section provides an outline of the TCB project. In doing so the elements of the system are necessarily presented along with some of the management rhetoric which accompanied implementation. The TCB project involved a small group of people reporting to the Director of Finance. This group comprised a mixture of individuals with quite different backgrounds. Some had significant experience in the Health Sector, while others were new appointments from the private sector. The group became identified as the casemix team, rather than with the clinical budgeting label, though within finance the official title was preferred.

The TCB project was to become the major response at HW to the Health Reform process. The casemix team were to become responsible for much of the effort which the organisation was to invest in building a network to address the information requirements which the new competitive environment (see discussion in chapter 6 and previous section) was placing on health organisations in general and CHEs in particular.

The process of translation of the organisation from an Area Health Board to a CHE operating in the changed environment of "competition" in the provision of health services will also be explained. The TCB project and the casemix team came to play a key role in the problematisation of issues and the enrolment, interessement and mobilisation of other people in the organisation. In following the theories of Latour there will be a significant emphasis placed on the role of technology in the form of accounting and information systems in the description of events at the hospital. It is the ability of these objects of technoscience to play a crucial determining role in the development of culture and the promotion of change within organisations which are of such interest.

The casemix team at HW were made responsible for the development of a system of budgeting within which service centre managers were to be given responsibility for controlling expenditure and the authority to make the required management decisions. The TCB system was:

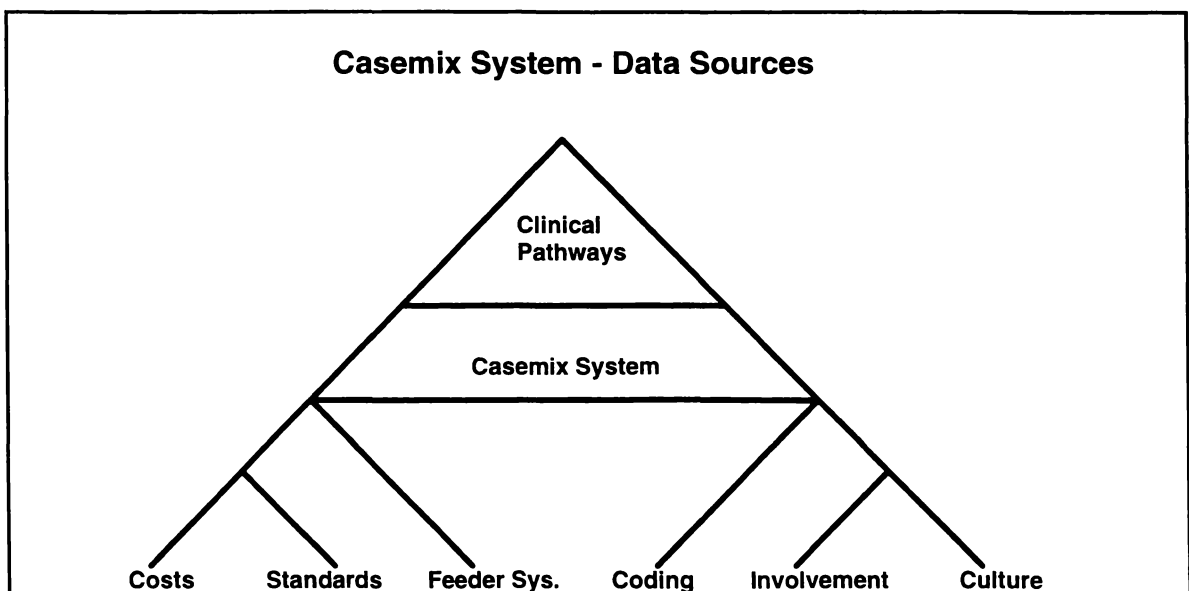
... to provide the organisation with the framework and tools to establish clinical budgeting...(to enable)...the maximisation of health benefits from available resources. (Business Plan, 1994, p.2)

As noted in the previous section the CHE has spent considerable staff time and resources to improve the quality of both financial and operational data systems. A good deal of this effort

is required to produce a reliable base on which to build the clinical budgeting system. This budgeting system draws information from a number of "feeder" systems including the General Ledger for cost data; feeder systems for volume data; patient management systems; admission and discharge systems; medical coding systems etc. (see figure 7.1).

In the case of HW the TCB system is based on a US software package called Transition, which is widely used in the US and Australian healthcare sectors to provide budgetary resource utilisation and other management information. Figure 7.1 indicates the hierarchical nature of the Clinical Budgeting/ Transition system. A feature of many accounting control systems is the collection of data at a low level within the organisation, drawing from other operational and accounting systems. The data are then typically aggregated in order to provide reports to middle and higher level management. At Waikato the type and amount of data which is being captured by the clinical budgeting system is extensive. In contrast to other accounting control systems there is a great deal of emphasis on the collection of non financial data, and the range of sources is therefore broader than the budgeting system in a typical commercial or manufacturing organisation. Much of the emphasis which the casemix team have placed on implementation in the early stages of the project has been on the identification of appropriate information sources and their development, in terms of accuracy, reliability and timeliness.

Figure 7.1 The Transition - Casemix System



(source HW Implementation Plan, 1994)

The TCB Project was officially commenced in mid 1993, though the central element of the information technology had been operating at the hospital since the mid 1980s. Originally referred to as the Resource Utilisation System, RUS was the term which the Transition software system had been known by within the hospital for a number of years. The following description of the TCB project is taken partly from analysis of the TCB Implementation Plan (1995), and from observations and interview discussions. Information is acquired by the Transition system from a number of sources (which will be the subject of further description in the detailed case chapters which follow):

1. Costs are fed in primarily from the general ledger which uses a system called Chairman.
2. Clinical and cost standards have been established after considerable detailed analysis and data collection. Categories have been established to enable nursing time to be identified to patients according to planned levels of nursing care, dependent on the condition of the patient. Within the Clinical Services Division, laboratory tests and blood products have been analysed and standard costs set after establishing detailed breakdowns of the elements of the products. In some cases this is closely related to the use of bills of material in a manufacturing environment.
3. Feeder Systems have been interfaced to the budgeting system to provide operational data on volumes for the laboratory areas and to the records of admissions and discharges to capture data on individual patients.
4. Coding of clinical episodes, using DRGs, is used to track patients and to categorise treatments into similar clinical groups. Internationally established codes are applied to diagnoses, in order to capture volumes of different types of types of case or episodes of care (see discussion on coding below). Any services or laboratory tests consumed by the patient are logged to an individual patient number.

As indicated in Figure 7.1 management have also sought to emphasise the importance of securing the involvement of all staff. The commitment of staff and in particular of clinical and nursing people is seen, by management, as critical to the success of the system. The casemix project leader intends that staff should be as informed as possible in order that they "take

ownership of the system during the implementation stage" (HW Implementation Plan, 1994, p.8). He regards this as essential in order to ensure the reliability of the base data, which is dependent on the records kept by medical people (See chapter 8 for further discussion of issues relating to medical coding of patient data). The communication associated with this objective has been handled in a number of ways from establishing committees to consider aspects of implementation and problems as they arise, to articles in the hospital newsletter.

For CHE management a key element in the implementation relates to the devolvement of the clinical budgeting system to the divisions. People have been appointed to the positions indicated within the divisions, of casemix analysts and clinical budgeting managers. The majority of such appointments have involved internal transfers of individuals from the casemix team. These people having established a good deal of rapport as part of a centralised group will be based physically within the divisions. This was designed to enable an implementation process which takes account of each divisions needs and establish "close links between the TCB team and divisional accounting people" (HW Implementation Plan, 1994, p.5)

In the Clinical Services Division implementation of the system is relatively advanced, and detailed flexible budgets are available for each department. A period of changeover from the prior static budgets to the new reports was planned to give some time to allow departmental managers to adjust to the new control system. Management intends that different control variables will then affect managerial actions. A significant part of the activity of this stage of the TCB implementation plan involves the extending of a network into various divisions within the hospital.

The casemix people who moved out from the previously centralised, project team, to take up the positions of casemix analysts and clinical budget managers were expected to spend the greater part of their time in encouraging other groups within the divisions to use the technology. The positions they were appointed to were described by the Casemix Manager as being central to the success of the present stage of the project. These people "would be expected to establish what the information requirements of clinicians and nurse managers were within their respective divisions" (Interview, August 8th, 1994). As indicated in the excerpts from the Implementation Plan reproduced above, these individuals were charged with establishing "... close links between the TCB team and divisional accounting people" and a key role in bringing about "...a significant change to the atmosphere of the organisation [and] a

greater degree of enthusiasm and a strong sense of partnership between clinicians and other management."

Effectively they were engaged in problematising issues and enrolling others into the casemix technology. Seeking to establish casemix as a solution to existing problems in some instances, while also endeavouring to promote casemix data for other, perhaps new purposes. An example of this latter instance would be the development of unit and departmental budget reports from the casemix system. These reports, which could take a flexible budget format, were regarded by the Casemix Manager as the solution to the newly problematised area of cost, cost efficiency and profitability.

Some clinicians express concern that casemix information may be used to justify management decisions on purely economic grounds, ignoring clinical issues.

I accept that some change was necessary. But the current situation is out of hand. The new managers are making decisions without any attempt to consult with clinicians. This system [casemix] will provide whatever excuses are needed ... (Interview with A and E surgeon, 20th July , 1994)

But it is very difficult to argue convincingly against more information, which is what systems such as casemix promise. The significance of the problematisation process is important here, since casemix has been widely portrayed and accepted as being a solution to the problem of ensuring that the hospital gains the required level of funding. Subsequent opposition to the casemix system can then be attacked as being against the interests of the organisation as a whole. That casemix provides the facility of a great flexibility of data inscription and representation, means that at the same time that information for contracting purposes is supplied a range of other analysis is enabled.

The Transition technology can be held out as having the ability not only to provide cost and 'efficiency' reports but also to offer other facets of the system which should assist clinical developments of best practice and treatment protocols. The availability of a database at the level of detail required within Transition also provides the potential of an enormous resource to clinical research of a variety of issues which may assist in increasing the use of available resources. As a minimum Transition will provide clinicians with a resource with which to

monitor the effects of changes in treatment regimes and the impact of applying clinical pathways¹.

There are clear indications above of the features of the Transition system which can operate as enrolment, interessement devices and mobilisation devices. This is in addition to the clear linking of the information technology, of casemix and medical coding, as a solution to the now problematised issue, of competition and contracting for health services. Latour uses the term interessement to label those activities which are engaged in order to identify other groups and individuals within the organisation who might become allies in the spread of the ideas of the initial group. In the case of the hospital the casemix team may be seen as the initiators of action who were given the task of ensuring the successful implementation of the TCB project. The principals of the Transition casemix project sought to identify, define and 'stabilize' the positions of other groups of potentially interested parties within the hospital.

The identification of key players at a time of change in any organisation is often critical (see Dent (1992) for an interesting study of the groups within a large public sector transport organisation and the roles they took in cultural change). This, identification of key players, was a crucial feature of the early tentative steps in the implementation of casemix and was clearly a feature of the efforts made by the casemix team and others as the implementation moved to the medical coding area and the attempt to expand the use of Diagnosis Related Groups (DRGs). Prior to the enrolment process the leader of the casemix team and senior members of his group met with managers and clinicians to establish their interests and where they stood in relation to the coding issue and the use of casemix systems.

Clinicians were selectively approached who were known to have some interest in management or who had been previously users of medical coding systems overseas in the UK, US or perhaps Australia. It was through these sympathizers that intelligence might be gathered on the groupings within the hospital and the sympathies of staff.

By deploying these interessement devices, the casemix group sought to establish the interests of groups within the hospital and indeed to identify how these groups were constituted. Which groups might be indispensable and which might prove to be likely allies. This process

¹The term used to describe the development of standardised treatment protocols for certain identified conditions.

commences with the identification and enrolment of individuals who might represent groups or be representative of groups within the organisation. Once the groups have been identified the process of enrolment may start. Links are developed, perhaps between individuals initially, but in order for strong alliances to be established some common interests must be identified or developed between the casemix people and the clinical people. It is here that, in the case of the hospital, the information technology is of particular importance. It is much more likely that clinicians or other professional groups within the hospital will find the casemix technology of interest and value than some exhortation to efficiency provided within the context of an accounting reporting and control system alone.

As indicated above interestment *per se* does not guarantee successful enrolment. But once groups have been identified and their interests established it becomes possible to set up a number of strategies designed to ensnare the key groups as allies to the casemix cause.

The contenders now have... to interest people in the outcome of their claims. With guile and patience it should be possible to see everyone contributing to the spread of a claim in time and space- which will then become a routine black box in everyone's hands. If such a point were reached...then... The contenders would simply sit at a particular place, and the others would flow effortlessly through them, borrowing their claims, buying their products, willingly participating in the construction and spread of black boxes. (Latour, 1987a, p.120)

Casemix may become a black box as a result of the efforts of the casemix people and the attractions of the technology itself. This is a long process, which may be reversed, by later events. Casemix is made more a "fact" or an "artifact" by the actions of the contenders. Some might be encouraged simply by the exhortation that as managers they must have adequate information systems to enable them to identify alternatives and take rational decisions. With administrators there was already a fairly close alignment of interests and indeed many of these people had been appointed only recently to the restructured organisation and were often selected with a view to establishing a managerialist ethic throughout the hospital. With this group the main problem would be a failure to match their expectations on the implementation of the casemix system and provision of management information within a short timescale (interview with the Division Manager for Women and Child, Aug. 1994). This would prove to be a real concern in some cases where divisional managers were appointed without an appreciation of the complexity of the health care environment in a tertiary hospital.

Other professional groups in the laboratories and particularly the clinicians and nurses, would be indispensable allies without the cooperation of a number of these people the system would

be in danger of not having a sufficiently reliable source of data to translate into management information. The enrolment of key people in these groups was a priority for the casemix team.

7.4 Extending the Network: Feeder Systems

In order for casemix to be able to provide reliable inscriptions of the activities within the hospital it becomes necessary to extend the collection of data throughout the organisation. As indicated earlier in Figure 7.1 the casemix technology may be depicted as a hierarchical network of interrelating data collection systems. Latour has a rather more developed notion of networks in his concept of the sociology of translation, in which the network consists of all the links among human and non-human actors which contribute to the strength and spread of the technology. The importance of systems development and the reliability of these developments is important, but is just a part of the production of "facts", the spread of ideas, which make up technoscience.

Every time an instrument is hooked up to something, masses of inscriptions pour in, tipping the scale once again by forcing the world to come to the centres, at least on paper. This mobilisation of everything that can possibly be inscribed and moved back and forth is the staple of technoscience and should be kept in mind if we want to understand what is going on inside the centres. (Latour, 1987a, p.233)

Reliable data collection mechanisms and accurate inscriptions are important to the integrity of the network and its ability to afford information, "facts", to those at the centre.

There are a number of aspects which have been identified as part of the process necessary to provide this information. Some constitute other systems, "feeder systems", while others are more to do with the communication necessary to ensure individual staff are aware of the importance of faithfully recording data of different types. It is here that once people have been enrolled they must be channelled in order to maintain the original intentions of the authors of the project. Latour uses the term mobilisation to describe this stage of the translation process.

...in the early British cotton spinning industry, a worker was attached to the machine in such a way that any failure of attention resulted not in a small deficiency in the product that could be hidden, but in a gross and obvious disruption which led to a loss of piecework earnings. In this case, it is part of the machine that is used to supervise the worker. A system of pay, detection of error, a worker, a cotton-spinning machine, were all tied together in order to transform the whole lash-up into a smoothly running automaton. The assembly of disorderly and unreliable allies is thus slowly turned into something that closely resembles an organised whole. (Latour, 1987a, p.131)

As part of the TCB implementation plan considerable attention was given to the need to persuade people of the necessity of the project. Much emphasis was given to the communication of the project and its objectives. The new relationship with the Midland RHA and the increase in competition for funding has also been given some prominence in formal and informal communications, both within and outside of the organisation. A number of visiting speakers from the US and Australia have also laid stress on the need for accurate data recording. These issues are all linked in addition to the processes of problematisation. If this process of persuading others of the "rightness" of your solutions is successful, then there will be less need for mobilisation devices to keep the human actors in line at a later stage. In this sense problematisation and mobilisation work jointly to ensure that the network, the casemix system may be extended intact. In the context of the feeder systems which were set up at the hospital, mobilisation is provided by the technology itself.

Once in operation the systems make demands of people and channel human activity into that which is necessary to support the system. People collate data, fill in forms, and provide all manner of inscriptions which increase the strength of the systems. It is these functions that are performed in part by related system developments such as DRGs and medical coding (see detailed discussion chapter 8), costing systems in Clinical Support Services (chapter 9), or patient data from the Admissions, Discharges and Transfer (ADT) system. Other people are encouraged by the casemix people to examine the inscriptions at the centre, to challenge the accuracy of the data collected and to begin to use information from the system.

The inscriptions which are produced from feeder systems such as this are quickly accepted within the unit and soon are an accepted part of accounting routine. In the process accounting technology provides "black boxes" which strengthen the casemix network, provide additional evidence of rationality and managerialism within the hospital, and play a part in channelling the human actors in directions which accord with the efforts to implement casemix more widely. A new regime where products and services which were till now free at point of use are now costed. Clinicians and others responsible for patient costs are given more information, which serves to remind them of the new culture, a new environment of cost consciousness and efficiency.

At the same time people within the units are enrolled into the casemix system. They accept the need to provide data for the costing and recharging system and in the process provide data for

casemix. The biochemistry laboratory manager clearly felt the recharging information of considerable value, and had played a crucial role in establishing the variables necessary to the costing exercise. It would appear that there is no threat perceived to the position of this manager, directly from the advent of a more financially oriented, profit motivated environment.

The outlook is much better, the situation can only improve. At present other areas have an 'open cheque book' on the (clinical) service departments. **Once charging comes in there will be much greater incentive for clinicians to use more 'rational' testing regimens and to seek advice from the labs..** (Interview 27th July, 1994)

7.5 The TCB Project: Black Boxes and Networks

The subject of my research at HW was the Transition casemix package. This is a very large 'instrument', comprising several modules which have been developed over a long period of time. The system is not self sufficient but relies on a range of other systems, both accounting, clinical and administrative to provide data to it. Transition is capable of providing a broad range of accounting and non accounting information, financial and non financial. But the system will not operate effectively, or indeed at all well, outside of this network.

The only way to prepare 'landing strips' everywhere for facts and machines is to transform as many points as possible of the outside world into instruments. The walls of the scientific galleries are literally papered over.... Machines, for instance, are drawn, written, argued and calculated, before being built. Going from 'science' to 'technology' is not going from a paper world to a messy, greasy, concrete world. It is going from paperwork to still more paperwork, from one centre of calculation to another which gathers and handles more calculations of still more heterogeneous origins..... in the very process of their construction they disappear from sight because each part hides the other as they become darker and darker black boxes. (Latour, 1987a, p.255)

The Transition casemix software is such an instrument, a sequence of "black boxes". The technology becomes a black box as it is accepted into the organisation. People use the system and accept the information, the inscriptions which it produces. The complexity of the system also reinforces the image of a "black box".

Transition can be seen as part of a much larger network outside of the hospital, and also as part of a complex network within the hospital. The Transition system draws information from many sources within the hospital and provides links between many different groups of health professionals and other support, accounting and managerial staff. Outside of the hospital the network can be seen to consist of other hospitals using the system around the world, the

Transition Systems organisation and its personnel, and a mass of technical and other literature which has been written in relation to the system and its effects. It is this network which provides support to new users. Indeed it is as a result of this network that the system spreads more and more widely and enrolls more institutions and people into its constructions of reality, its "facts".

There are several issues which arise out of the significance and extent of these networks. The process of translation can be observed to operate at different levels. Though this chapter has concentrated on describing the effects of enrolment particularly within the hospital, similar effects are also taking place outside of the hospital when we view the hospital as just one node within a much larger network which takes in Transition, other health providers and funders across the world and the technical literature.

We can now begin to appreciate not only how extensive a project we are engaged in observing but also begin to appreciate better the reasons behind the spread of the technology and its strength. Observation of this network of "hybrid" technical system and human organisation, indicate some of the ways in which the translation process takes effect within its network.

The Transition organisation maintains an active support organisation which sends people to visit users on a regular basis. In the case of New Zealand users, this typically has involved experts, "spokespersons" from the US or in other instances Australia. Other spokespersons are recruited from other user organisations. In most cases at HW these visits by user "spokespersons" have been arranged at least in part through contacts involving the Transition organisation. Under the circumstances briefly sketched above it is possible to see the manner in which enrolment and mobilisation are achieved. Newer users are recruited to the system in a number of ways, in the case of HW this was quite indirect. A decision by the New Zealand government resulted in HW and others acquiring a relatively early version of the Transition software as trial sites in the mid 80s. The system did not penetrate much into the workings of the hospital until after the commencement of the Health Reforms in the early 90s, and the extensive implementation of casemix budgeting at HW started in earnest in 1993/4.

Though the Transition system is not inflexible, it of course contains rigidities and imposes structure on the users who adopt it. As a consequence users, like those in New Zealand, including HW once enrolled are subject to technical and other restrictions. The technology

spreads and elements of the network come together to reinforce the "facts" and channel enrollees in the process of "mobilisation".

Latour spends some time discussing the process of translation and in particular what 'transformations take place between the appearance of an idea as a 'weak hesitant possibility' and the progression to 'hard fact'. Latour reserves his most telling comments in emphasising the power of visual demonstration, rather than inscription on paper. He draws his examples from a series of developments in the science of endocrinology.

After hours of waiting for the experiment to resume, for new guinea pigs to become available, for new endorphin samples to be purified, we realise that the invitation of the author ('let me show you') is not as simple as we thought. It is a slow, protracted and complicated staging of tiny images in front of an audience. 'Showing' and 'seeing' are not simple flashes of intuition. Once in the lab we are not presented outright with the real endorphin whose existence we doubted. We are presented with another world in which it is necessary to prepare, focus, fix and rehearse the vision of the real endorphin. **We came to the laboratory in order to settle our doubts about the paper, but we have been led into a labyrinth....** The stakes have increased enormously ... In order to argue, we would now need the manual skills required to handle the scalpels, peel away the guinea pig ileum, interpret the decreasing peaks, and so on. (Latour, 1987a, p. 67)

During the casemix implementation process employees of the Transition Systems Corporation visited HW on a regular basis. These people acted as the spokespersons for the machine, the software system. Since they had much more detailed knowledge than any of the hospital staff they were regarded with some respect and were difficult to question successfully. The Transition spokespersons were indeed able to make the system and the facts talk, they were able to produce reports easily from out of the system and were able to take hospital people to see their questions answered in one part of the software package or another. If a difficult question arose the spokespersons were able to direct the questioner, 'dissenter', to the relevant reporting module within the Transition package.

... it is very important not to limit this notion of spokesperson and not to impose any clear distinction between 'things' and 'people' in advance... From the spokesperson's point of view there is no distinction to be made between representing people and representing things. In each case the spokesperson literally does the talking for who or what cannot talk. The Professor in the laboratory speaks for endorphin like Davis for the neutrinos and Bill for the shopfloor. In our definition the crucial element is not the quality of the represented but only their number and the unity of the representative... confronting a spokesperson is not like confronting any average man or woman. (Latour, 1987a, p. 72)

This ability of the spokesperson to let the facts do the talking, of allowing the audience to see for themselves what the technology can do is extremely powerful and usually convincing. If the spokesperson has represented the facts in a particular way that is questioned then he/she is able then to :

display to the dissenter what he or she was talking about. How can the debate be stopped from proliferating again in all directions? How can all the strength that a spokesman musters be retrieved? The answer is easy: by letting the things and persons represented *say for themselves the same thing that the representatives claimed they wanted to say*. Of course, this never happens since they are designated because, by definition, such direct communication is impossible. Such a situation however may be convincingly staged... No matter how many resources the scientific paper might mobilise, they carry little weight compared with this rare demonstration of power: the author of the claim steps aside and the doubter sees, hears and touches the inscribed things or the assembled people that reveal to him or to her exactly the same claim as the author. (Latour, 1987a, p. 74)

In two seminars presenters with clinical backgrounds used very high tech computer assisted slide presentations. In one case a urologist from Christchurch used what appeared to be a series of inquiries of a casemix system to demonstrate the power of a Transition based system to produce hierarchical reports at high degrees of aggregation while retaining the ability to allow clinicians or others to make selected enquiries of selected data and be provided with stages of more and more detailed information. A budget overrun at the departmental level after several screens of data and appropriate menu choices, was revealed to be a consequence of two or three very long stay patients. Patient details were available, on screen, and additional data on clinical procedures and other aspects of the treatment episodes were displayed.

The whole presentation was very convincing. The audience which was mainly clinicians and nurses appeared very impressed. The speaker handled several technical questions with great confidence. Only later did the speaker reveal that the example was entirely contrived, that the existing casemix system at Christchurch could not provide the information in the format or detail, which had been presented. A very convincing demonstration had been presented after considerable effort by other people to gather the data, produce the analysis and produce mock-ups of the required computer screens. The seminar was a resounding success, the medical staff present were generally impressed with the flexibility of the casemix system. The clinical budgeting project at HW had spread to new enrollees, potential allies, who had been brought that much closer to the network, which constituted the clinical budget project.

Spokespersons provide convincing illustrations of the value of casemix budgeting and the use of nonfinancial measures in the development of clinical protocols. As a matter of course these promoters of casemix and Transition implicitly and explicitly provide support for the technology as it is, and users are encouraged to develop their implementations along similar lines. In consequence the technology spreads further as new organisations are encouraged to take on Transition casemix systems. It is in this sense that Latour wishes to emphasise the crucial nature not just of taking account of the networks within which technology spreads, but

also of the importance of the black boxes which are brought in as part of the network. These black boxes are constituted by rules within the software or principles and methods within accounting systems. Though such structures were indeed the result of human invention, they are no longer subject to human control, or at least not under normal circumstances.

Acceptance and implementation of the Transition casemix system implies acceptance also of a host of black boxes which constrain subsequent action and channel development of the system in prescribed directions. In acknowledging the ability of systems and technology to effect the social structure within organisations, we accept the need to study the technical elements of accounting and other associated systems within the hospital. It is only in this way that we will be able to study "natures-cultures" jointly and seek a holistic interpretation of what we observe within the organisation.

At the beginning, I presented the quandary of fact-builders. They have to enrol many others so that they participate in the continuing construction of the fact (by turning the claims into black boxes), but they also have to control each of these people so that they pass the claim along without transforming it either into some other claim or into someone else's claim. I said it was a difficult task because each of the potential helping hands, instead of being a 'conductor,' may act in multifarious ways behaving as a 'multi-conductor': they may have no interest whatsoever in the claim, slant it towards some unrelated topic, turn it into an artefact, transform it into something else, drop it altogether, attribute it to some other author, pass it along as it is, confirm it, and so on... The paradox of the fact-builders is that they have simultaneously to *increase* the number of people taking part in the action-so that the claim spreads - and to *decrease* the number of people taking part in the action - so that the claim spreads *as it is*... this paradox was solved by translating interests and tying them with non-human resources, thus producing machines and mechanisms... these features of technoscience... are the rule inside the networks. (Latour, 1987a, p207)

A critical piece of technology within casemix is the availability of a classificatory scheme to summarise the mass of information on the provision of disparate clinical services by health providers. The range of services is such that a coding system (DRGs) consisting of several thousands of individual codes is required, to provide a simplified classification. The original intention of the DRG system was to provide a statistical summary of clinical procedures in nonfinancial terms as a base for the application of techniques of Quality Management and Statistical Process Control. Within a short space of time the original aim was diverted to that of a financially orientated system with the primary objective of controlling and perhaps constraining funding in certain sectors of the US health system (Fetter, 1993). This illustrates the way in which technological developments can be subverted to achieve other aims than those of the first authors. The change could also be viewed as demonstrating the way in which once an issue has been problematised there is a tendency to seek out solutions, which as in this case may not be immediately apparent and require the subversion of existing techniques to achieve new aims. Excessive spending on the public health system in the US was the issue that

had been problematised at the time and DRG coding as a funding mechanism became the solution.

Much later when casemix was adopted in New Zealand, in some cases using the Transition software. The DRG coding system came as "settled science" a black box which formed a part of the network of casemix. This is not to suggest that DRGs never change, in fact people are engaged in different centres "of calculation" in producing regular updates and amendments. There is indeed not one DRG system, but several, an Australian version having been chosen for implementation in New Zealand. The Clinical Budgeting project at HW is influenced and channelled by the choice of DRG coding system and by elements of the accounting and other data collection systems implemented at the hospital. People are able to influence the direction of some of these developments, but are constrained by other elements in the network, other members of the "collectives", of the human and non-human variety.

At HW those systems which provide information to the Transition casemix system are described as feeder systems. They include the general ledger of the hospital as well as patient management systems and laboratory operating systems. This becomes a system of great complexity needing an enormous amount of maintenance, in terms of computer processing power and people. Specialist staff have been engaged on specific projects to prepare the ground for the introduction of casemix into particular areas, and/or to assist with the implementation or extension of specific elements of the casemix system to areas not previously covered. This has been a slow, time consuming process, during which a great deal of effort has been spent on ensuring the reliability of the system and convincing others of the attributes of the system. This activity frequently involves casemix project people in exploratory work, not only to understand the casemix system and software, but also to encourage the involvement of others to be able to identify what the system can provide for them. Without this enrolment and the recognition of the explicit interests of the others the system would remain in Finance or Systems rather than outside in the hospital.

The influence of accountants at the hospital has increased and one of the results of this change was seen when the Finance Division took over responsibility for the implementation of the Transition Casemix System in 1993. Previously this function had lain within the Systems Division. This change relates to an extent to the success with which issues came to be problematised in financial terms. Solutions to such "problems" in health care were increasingly expressed in terms of markets, costs and prices. This change in the culture of health care led

at least in part to the change of priorities and in effect power within the organisation. The authority and power which the responsibility for the development of the casemix system entail were and are considerable. It became the accountants who were to be the gatekeepers of the system and the Finance Division which became the gatekeeper for a vast array of crucial financial and operational data within the hospital. This was not only internal management information but also the basic information for contracting and reporting to the outside constituent organisations, i.e., the Health Ministry (through CCMAU and otherwise), the Midland Regional Health Authority, and other bodies such as ACC and the Public Health Commission.

... administration, bureaucracy, and management in general are the only big resources available to expand really far...[the] vast and insulated pockets of science are probably best understood if they are seen to be scattered through centres of calculation, dispersed over files and records, seeded through all the networks and visible only because they accelerate the local mobilisation of some resources among many others that are necessary to administer many people on a large scale and at a distance. (Latour, 1987a, p.255)

At the hospital accountants and their close associates took over as obligatory passage points into the casemix system. They would be approached by clinicians for data for research purposes and as the enrolment process continued to be successful more and more people came to rely on aspects of the casemix information system. By mid 1995 profit figures were being reported for individual slices of the business, wards and laboratories, and across the business by DRG. Management attention was focused on profit or loss making areas, or less and more serious loss makers. Clinicians within Surgery were implementing strategies to reduce pre-operation stay, in response to DRG cost reports from casemix.

7.6 Concluding Comments

This chapter has presented an overview of the environment at the hospital as management, in particular, pursued strategies in response to the health reforms. Emphasis has been placed on the "Towards Clinical Budgeting" project which was the title given to the attempt to implement casemix accounting throughout the hospital. Some managers also referred to this project as the "resuscitation of RUS" (RUS or Resource Utilisation System was the original title given to the earlier implementation of Transition casemix software at the hospital). Particular attention was given to an outlining of the implementation plans which were prepared for the casemix clinical budgeting system. This serves two purposes, to enable a brief outline

of the elements of the system to be provided initially and also to provide an indication of the comprehensive networks which were needed throughout the hospital to enable the provision of casemix information. The networks are constituted by human actors together with information systems. These technologies play a central role in the processes which come to effect the hospital environment and will be examined in greater detail in the following chapters.

The present casemix system has been under implementation at HW since 1993 and indeed a number of staff have been involved in implementation of the Transition casemix package since 1985 when it was first acquired at the instigation of the government. Since mid 1993 implementation has been renewed, involving more staff outside of the Systems Division, particularly accountants from the Finance Division but also including others from operational functions such as the wards and laboratories. In this process of translation and enrolment much has been accomplished in terms of making the system part of the everyday functioning of the hospital.

I have sought, in the above, to indicate the particular role played by accounting and other information technology in the implementation process. The process of translation may be seen to depend very much on the effectiveness with which the casemix team with the support of other managers have enrolled "hybrid objects", or technologies, in the process of enrolling and mobilising other people and groups within the hospital.

Chapter 8: Bringing in Black Boxes: Diagnosis Related Group Coding

8.1 Introduction

This section of the thesis, consisting of this chapter and the two following chapters, will provide a series of descriptive case studies of aspects of the change process as it has impacted upon the research site. The object in this chapter is to explicate the part played by the DRG coding system in providing impetus to the casemix system implementation at the hospital.

Accounting as a practice and as an object with its own existence and “agency” is placed at the centre of the research story presented in this chapter. In “seeing” accounting and accounting systems as being constituted by “black boxes” two questions naturally follow. One concerns the processes which surround the establishment of “facts”, ie. how “black boxes” are created or accepted (even if temporarily) within society. The second concerns the role of existing “black boxes” within society and organisations. What role does the accumulated knowledge which constitutes accounting play in the patterning of organisational life. Both of these are legitimate research topics.

The existing literature (Preston et al, 1992; Chua, 1995) has tended to concentrate on the first of these issues. Such research has addressed the “fabrication” of accounting systems. Preston et al places much importance on “arriving before the technology becomes settled” (a phrase borrowed from Latour 1987. See chapter 4, section 4.3.1) in order to trace the creation of a “finished” system, a closed “black box”. These authors are concerned to explicate the manner in which “facts” become accepted as such. Though this is of interest to me as it was to Preston it cannot be the whole story, since as Latour clearly notices there are many more “closed” boxes than those seeking “closure”. In my study I am attempting to look at both. While it can be argued that the casemix budgeting system has still not reached “closure” the same is harder to say of DRG clinical coding. Yet we still need to recognise that any of these “closed” boxes are potentially open to “re-opening”. There are interesting concerns around these two research aims. How to portray the role of already existing black boxes without giving the impression that they are closed for all time? That they are indeed only social constructions. How to balance the explication of the fragile nature of a new system implementation with the

sometimes powerful influence of accepted accounting practice and technique?

The structure of the remainder of the chapter is as follows. The next section contains most of the discursive evidence of the implementation process and related theoretical argument. The following two sections of the chapter present evidence on the nature of DRG coding and its implementation at the hospital: the first of these sections outlines the relation of medical coding to the need for contracting information; the next section is largely a description of medical coding. This is followed by a short discussion section which draws out the implications of the sociology of translation to the case material presented. The concluding section provides some final comments.

8.2 The Process of Enrolment in the Surgery Division at Health Waikato

The term enrolment is used by Latour to describe the efforts of an originating group to form alliances with others. This process is part of the sociology of translation and involves groups or collectives, which may consist of both human and non-human actors. Within the casemix system there are powerful agencies acting to promote agreement and thus enrolment. These agencies or actors include both humans and non-humans. The non-human elements in our collective consist of the information and accounting technologies which have been, or are being deployed within the organisation. The medical coding system is an example, which forces the compliance of human actors in fulfilling the information needs of the system.

Accurate diagnostic information on patients must be provided in order that an episode of treatment may be coded. If this is not done effectively then the system will provide for some action to be taken to obtain that information from the clinician. This action may involve other human actors, but the key point is that it is the system which operates to identify a discrepancy and acts to remedy that discrepancy. It becomes much easier for the clinician to provide the required information up front, than to be continually contacted and distracted from other activities and requested to provide the clarification necessary for the treatment to be appropriately coded (see discussion in section 8.4).

The structure of the part of the casemix system which relates to clinical coding and diagnosis lies at the heart of the casemix implementation. Though essential for external justification and

capture of health funding, the coding system lies also at the centre of the clinical budgeting project within HW. Patient progress through the hospital is essentially seen as a series of episodes, each to be interpreted by a diagnosis or a set of diagnoses and procedures which must be captured and recorded in sufficient detail in order to ensure the accuracy of the resultant documentation and dependent systems. The diagnosis is done, or checked, generally by the senior clinicians. Documentation is provided to record the treatment of the patient and his/her progress through the hospital. These records then provide the source information from which DRG codes are derived. Prior to early 1995 this work was done by people with clerical experience at the Hospital, often lacking a significant understanding of medical procedures. The lack of knowledge combined with a general poor level of legibility of clinicians description of the procedures used and diagnoses arrived at are providing a level of concern for the administrative staff at the hospital as well as for the RHA.

The Midland RHA provided a course for "coders" from within its region, which it financed itself, in May, 1995. Despite this availability of training for little cost apparently not all health providers who were invited, sent delegates.

An audit manager from the RHA, who has several years experience of the DRG system in NZ and previously in the US expressed some disquiet at the lack of qualified and trained coders in NZ.

Coding is a real concern. Our first coding audit results for Waikato have just become available. The reliability is not acceptable. The coders down there are just not up to scratch. I can't see them making the July 1st deadline that we have set (Interview, 26th August, 1994).

She was also skeptical of the ability of NZ health providers to fulfill targets for coding accuracy because of a lack of qualified and trained coders in NZ:

Coding is a real problem in this country. The coding staff at Waikato are clerks who have often been at the hospital for years. They are not qualified coders in contrast to North America where most coders are qualified by university degree in Health Coding. The coders here typically have no formal qualifications at all. (Interview, 26th August, 1994).

The audit had been carried out by consultants using staff in part brought in from Australia. The use of overseas people for this activity provided further emphasis on the lack of able people in NZ.

HW is trying to involve clinicians more closely in the coding process in an attempt to improve the resultant information. This is being effected both by trying to get the clinicians to code

themselves, but also to make the clinicians more aware of the problems faced by the coders. One aspect of the change in approach to coding and involvement both, active and passive, of the clinicians was illustrated during an interview with a coder at HW. In explaining the coding process and the relation of the medical notes to the selection of appropriate ICD9 codes the coder explained that

Not only the front sheet [showing the clinicians principal and other diagnoses] is used in coding a patient episode. Usually we need to make a thorough examination of the supporting documentation [at this point the coder reached for a thick manila folder in a pile on her desk]. Here is a case which I am going to have to query with the doctor. [after a gesture to me she picked up her telephone and rang to the clinician who had been in charge of the case]. (Interview Medical Coder, Surgery Division, 14th February, 1995)

The ensuing conversation made it clear that medical coding was taken seriously. That clinicians could expect to have to field questions from coders where there was uncertainty, and that the coders now occupied a position of influence in the organisation at least in respect of the work practices of clinicians. Coders it seemed were to be seen as the gatekeepers of the casemix system. They would do their utmost to ensure “accurate” and “fair” coding of each patient episode.

A committee has been at work since February 1994, looking generally at ways to improve the coding procedures in use in the organisation. Three meetings of this group were observed and minutes of other meetings were examined. The committee has encouraged a number of initiatives including the use of a team approach to address coding problems within particular areas of specialty within the Surgical Division. In these areas the senior nursing staff have been closely engaged in efforts to improve the accuracy of both information provided on diagnoses and treatment and on the coding activity itself.

The initiatives in the first year of the committee’s activities have largely concentrated on involving different groups of staff in the coding process. This has given rise to increasing attempts to provide links between the coding people and the clinicians and especially with key members of the nursing staff. Meetings have dwelt on issues such as: identification of coding errors; delays in the availability of patient records and test results. Some of the problems involving Radiology have been addressed by forming teams of staff to identify problems and examine ways to resolve bottle necks affecting the flow of paperwork within the unit. In other cases delays have been identified as being associated with particular employment practices and the involvement of some units with medical teaching programmes.

The social processes within the committee were interesting in the apparent level of agreement across groups of staff and are worthy of further explication. Though some members of the committee were regular in attendance others were less often present. The committee was set up within the Surgery Division initially with the intention of acting as a pilot within that area which would gather experience which could then be applied to other clinical and medical areas. Membership was largely from Surgery, including clinicians, nurse managers and other management staff. Members were also invited from Systems and from medical coding. Generally it appeared that attendance among clinicians was less frequent than among nursing staff. The meetings attended were generally animated with a spread of contributions from individuals representing different areas and specialties. The nurses showed considerable enthusiasm for the developments. They appeared to take the lead in responding to initiatives to extend coding within the Division. Often they were the first within a unit to request coding manuals and had spent time simplifying the DRG material available and picking out the areas relevant to their specialty. In this respect the nursing staff appeared to relish the opportunity to take up the coding challenge.

It [the responsibility for coding] falls on us to do the homework and extra time on coding preparation. I have put in hour after hour of effort to extract our codes from the manuals [ICD9 documentation], along with help from Marilyn's people [the medical coders]. If someone does not do this we won't know where we are. These notes have been prepared in order that our clinicians and senior unit staff can see what's happening in this our unit. (Nurse Manager 1, Surgery Division, Meeting of the Coding Committee, 18th August, 1994)

Our clinicians don't have time for this [analysing and extracting ICD9 codes]. Either I and the senior nursing staff do it or it doesn't get done. (Nurse Manager 2, Surgery Division, Meeting of the Coding Committee, 29th September, 1994)

It might also be that they saw the opportunity to get "one up" on their clinicians. References to 'our clinicians' were often made in a somewhat "motherly" tone and the indication given was rather of the need to help the clinicians through an additional task.

The nursing staff appeared happy to take the responsibility for the sake of the unit and indeed the organisation. Perhaps the nurses felt that some of the clinicians were 'too busy' and perhaps distracted, therefore the nurses would make the DRG coding system work. The committee took the view that if the coding system were to work effectively clinical staff must understand the coding system in some detail at least in their area of specialty.

A second principle which guided a number of the discussions in committee, and indeed the

follow up exercises carried out within the units, was the imperative of achieving DRG coding within a set time period following the end of each reporting period. One of the reasons mentioned, most frequently, for this was that the RHA intended to contract to pay for services on a month by month basis based on actual throughput. Consequently it was argued that if treatments were not coded within a certain period funding would be delayed until the following period. Initially it seemed that the committee members accepted that to ensure this problem was avoided coding must be completed within a maximum of 3 weeks from the end of each reporting period. This factor was discussed on a number of occasions as staff became familiar with their objectives and uncertainties over the nature and aims of the project became resolved.

Typical projects would involve a single surgery unit undertaking a project, to improve coding or the recording of diagnoses in its area. Over a period of several weeks the project would be something of a priority for staff particularly the nurse managers and some of their support staff who would endeavour to identify and disseminate information about the ICD 9 codes relevant to their specialty. During these projects the medical coders might also spend time working in the unit so that any problems of interpretation might be cleared up promptly and indeed perhaps resolved on a permanent basis. Once again such approaches to the coding project in more general terms may be seen as another instance of the perception of the need to enrol people in support of the project and to seek significant others who may have objectives which may be achieved within the scope of the original project objectives. In this instance it is clear that the project was organised in a manner which gave the greatest opportunity to achieve successes through cooperation on subsidiary aims, thus encouraging commitment and a sense of shared objectives.

The nurse managers were newly appointed to their positions, most having been in post for less than nine months, and were anxious to find a successful outlet that would demonstrate their management skills. Though they might not all have been equally enthusiastic about coding, it was a project which clearly had significance to the organisation and to their individual units because of its funding implications. In addition it may well be that some of the senior nursing staff perceived this project as providing an opportunity to improve their position relative to the clinicians.

The coding project appeared to progress successfully for well over a year. Objectives were set

and met, while staff, predominantly nurses, appeared to retain a good degree of enthusiasm for their own targets within the project. It appeared that there was a good level of rapport among staff within the project, some of whom such as the coders would not have had much if any contact with the medical staff previously. Cooperation was evident as the project was extended from one unit within surgery to another and a number of clinicians became more fully committed to the exercise.

The coding committee met on a regular basis for about 9 months from early 1994, the last meeting was held on 29th September 1994. This meeting was well attended, the manager of the Systems Division, the Clinical Budgeting Manager and various senior staff from the Surgery Division. Initially the meeting appeared to progress very successfully. A surgeon raised the issue of using READ codes to provide a more appropriate level of clinical detail in the coding of clinical episodes. In response the Manager of the Systems Division explained the structure of the coding system briefly while emphasising the importance of providing information which would meet the requirements of the RHA

We can accommodate any coding system you might want at the operational level. Since the DRG coding software can be matched to aggregate from other coding systems such as READ, in the same way that it does from ICD9. (Director, Systems Division, Meeting of the Coding Committee, 29th September, 1994)

This was in effect confirming that software could be acquired which would be capable of consolidating whatever primary coding system might be selected into the DRG codes which would provide information to organisations outside the hospital such as the RHA and CCMAU. It became clear later that the clinicians within Surgery were to have less choice than this statement appeared to suggest.

The agenda progressed to an item on the timing of the cutoff for medical coding available to be processed by the medical coding staff. This discussion initially rehearsed the importance noted earlier to have coding done within a certain period in order that funding could be obtained from the RHA.

At this point the Casemix Manager intervened to suggest a rethink on the timing of the cutoff. He suggested that the medical staff should aim to achieve the transfer of all coding documentation to the medical coders within five working days of the month end. This was a considerable change from three week timescale noted earlier and was intended to achieve a

date for the coding of medical data which would coincide with the cutoff date already established for closing the financial accounts for a period. A number of contributions were made at this point as several of the medical staff sought to explain the impracticality of the new objective. There was clearly some tension in the next several minutes of discussion, as the chairperson of the committee sought to defuse the ensuing disagreement between the Surgery staff and the Casemix Manager.

The committee did not convene again in the same form after this meeting. It later became clear from discussions with surgery staff that the interpretation they placed on events was that the dispute had been 'arranged' by the Casemix Manager. Apparently they felt that he had been unhappy at the direction being taken within the project in recent months and the progress made.

Though some dislocation did result the process had progressed sufficiently far that the process of clinical coding was well on track in this division. Groups of staff including some clinicians and particularly senior nurses were now enrolled in the project and the further implementation of clinical coding appeared to be assured. It might be clear at this stage that it is difficult to implement a system which requires this amount of detailed information without affecting the internal operations of the organisation.

The interrelationships involved in casemix systems are very complex, such that though the hospital administrators may see their primary aim as to provide an image of rationality and efficiency to the RHA (Meyer and Rowan, 1986), this may not be achieved in isolation. Other influences play a part as the system is implemented. Some people are drawn into the implementation, as it becomes clear that this is necessary to ensure prompt and reliable data input. Some may see an advantage in the reporting of certain information and become supporters of the system for reasons of self interest. Others may respond in unforeseen ways to the threat which they may perceive from change or potential change.

8.3 Contracting and the Development of DRG Costs

The technical constituents of the DRG must also have average budget costs determined in order to use the information as a budgeting tool. Having established the budget information,

on the basis of standard costing procedures or international comparison, it is possible to contract on a dollar basis with the health purchaser, Midland. Contracting on this basis began in July 1995. Prior to this HW staff prepared trial information comparing actual costs with Australian DRG cost data.

In the increasingly 'competitive' environment in which health providers in New Zealand find themselves there are clear priorities requiring the management of cost in the provision of secondary health services. A central feature of the health reforms has been the establishment of a purchaser provider split to create a quasi market situation and a proxy for competition as an initial step.

It is still the avowed intention of the reformers that more usual forms of market competition will develop as private providers are expected to enter areas of service traditionally the sole province of the public hospitals. In this process of separating the funder from the provider a system of contracting has been established and become increasingly significant. Initially the contracting process was less than 'arms length', contracting was carried out as an iterative process and lack of detailed information made it difficult to establish the volume based contracts which were desired.

At this stage most of the funding is still essentially on a bulk funding basis. Contracts are being established on a rolling basis. This is dependent on the availability of reliable data and is being established in the areas of the hospital which are most easily measurable. As a consequence it is within Surgery that the first competitive contracts have been established. The early contracts have tended to cover elective surgery procedures primarily. (Interview Divisional Accountant, Surgery Division, 18th August, 1994)

Contract negotiations were carried out, throughout late 1994 and 1995, on a rolling programme, where certain areas of health provision are made available to tender on a periodic basis. This is part of a gradual process in which different parts of the surgical services area are contracted on usually a 3 year basis. As more sophisticated data become available both to the RHA and the staff within the CHE the contracting process is becoming more detailed and based to a greater extent on contracting for increasingly specific volumes and designated treatments.

Management and staff had concerns over the financial viability of some of the clinical activities of the Surgery function. These concerns were as a result of the strong belief that the independent nature of the services provided within surgery would make it relatively easy to

remove parts of the present service and replace with private health providers or other public health providers from outside of the Waikato Region. Some of the staff were worried that this could restrict the ability of the division to operate at a sustainable volume.

We have a problem relative to Medical [Division], in that our main areas of provision are more clearly defined and measurable in such terms as DRGs, clinical procedures and such like ... This makes us [Surgery] more vulnerable if cuts [in funding] are imposed by the Ministry and RHA. (Interview TCB Analyst, Surgery Division, 24th February, 1995)

Both the divisional accountant and TCB Analyst, in the Surgery Division, were keenly aware of the overheads incurred by the present organisation's structure and environment and doubted the ability of the division to lose significant, and profitable, areas of current provision and operate remaining areas successfully.

Staff within the Surgery Division are spending a significant amount of time generating financial estimates for the contracting process. Accounting issues are again of significance in decisions being made and negotiation positions taken. One particular debate has arisen over the interpretation of fixed and variable cost and the manner in which cost behaviour needs to be reflected either within the contracting process or in the way in which the units within the CHE are managed. The TCB analyst illustrated his concerns by telling me about a current contract bid. This was for a set volume of elective procedures, or episodes of care.

In our calculations for this [contract bid] ... for an additional elective surgery contract we have used an incremental approach. The outlay has been figured to include only additional costs ...we are not allowing for any recovery [of overheads]. This proposal caused some conflict with corporate. (Interview TCB Analyst, Surgery Division, 24th February, 1995)

Clearly issues arise over what value should be used for contract negotiations. If estimates are based on full cost then volume changes become of crucial importance. Whether to use lower cost figures based on the recovery of direct cost to ensure that key service areas are retained is also an issue.

Within Surgery these particular debates have also been played out in terms of which costs to 'treat' as either fixed or variable in nature. Such issues demonstrate not only the subjective nature of such categorisation of cost items by behaviour but also have significant effects on apparent cost structure and perhaps the resulting contracting process. This includes such basic issues as whether to treat clinicians remuneration as part of fixed or variable costs.

We've had a number of disputes over the treatment of overhead recovery within casemix. I have serious concerns about the way in which we might treat our fixed costs. We can't even agree what they ought to include. There are difficulties [loss of contracts] looming for Surgery if we don't get this right. (Interview TCB Analyst, Surgery Division, 24th February, 1995)

This is of course a variation of a long established theme within management accounting on the circumstances under which to treat costs such as labour as variable or otherwise. More recent debates in the literature have cast doubt on the use of variable cost concepts and the cost volume profit technique in its entirety (Kaplan 1989, Shank 1989; for an alternative view see Horngren 1989).

There has been a debate over which DRG coding system to use. The debate involves principally the Ministry of Health, but extends to the four RHAs and the CHEs, of which HW is one of six in the Midland RHA region. In late 1994 there was an expectation that an Australian version of the DRG system would be adopted, according to a contracts manager at the Midland RHA.

The Ministry were favouring a UK system called READ quite late last year but the likely system now is the ANDRG system which has recently been implemented in the state of Victoria. (Interview, 26th August, 1994)

A discussion on coding at a meeting of managers and clinical directors within the Surgery Division at the hospital produced some interesting comments on the DRG coding issue. This was provoked by an item relating to the Division's budget and its likely claim on RHA resources. A discussion ensued involving primarily the Business Manager of the Division and a number of clinicians. The Business Manager made the following comment:

I have been informed that [RHA] funding into the Division and individual units will become dependent on monthly volume measures. This information will be based by the RHA on only DRG coded work completed within the period and coded by the 14th day following period end. (Business Manager, Surgery Division, Meeting of the Coding Committee, 29th September, 1994)

Several clinicians made to speak, one gave the following reaction:

Is this possible? Are the RHA able to do this? What is the timescale on this? (Clinician, Surgery Division, Meeting of the Coding Committee, 29th September, 1994)

Others made related comment before the Business Manager made the following reply:

They can make whatever conditions they like in the contracting process. We are able to negotiate. But if they are able to get a similar agreement with another provider we will have problems in resisting. (Business Manager, Surgery Division, Meeting of the Coding Committee, 29th September, 1994)

It became quickly apparent that there was now considerable interest in developments in

relation to the coding issue, since it is clearly seen as central to the future of this division and indeed the hospital in gaining access to funding. Indeed a significant part of the current budget is linked to the volume of surgical activity as defined by the present ICD9 DRG system. On the other hand it was noticeable how little knowledge, particularly at the level of individual clinicians, there is within the hospital on this issue. Though the clinicians are anxious to be made aware of the detailed implications of the system, and indeed clearly hold some strong preferences as to the system to be adopted, they are clearly unaware of the current situation as regard the decision to adopt the ANDRG. (Meeting, 29th September, 1994)

A number of clinicians appeared to favour the READ system and were particularly concerned at the continued use of ICD.9. Two major issues were voiced in relation to the present coding system. Perhaps the most significant relates to the dated nature of the clinical coding represented in this early application of the casemix system. The version of the casemix coding in use at HW dates from 1985, and it was pointed out does not therefore cover some of the more recently developed diagnosis and treatment procedures. Though a major exercise would be required to establish to what extent the coding system is currently deficient, this is clearly a potentially difficult situation in which to be attempting to introduce such an important piece of technology.

A related though distinct problem relates to the timing of the system implementation, ie. the requirement to be coding now with the existing ICD.9 system in the knowledge that a decision has already been taken to update to a much later and to an extent incompatible coding system. The clinicians clearly were unhappy at the prospect of investing the time necessary to become familiar with an "outdated" system.

Some consternation was expressed regarding the imposition of a system from "outside" and some support for the READ (UK system) relative to that from Australia (ANDRG). At the same time the apparent lack of knowledge and ability to influence the decision appeared to provide an object capable of producing a certain degree of mutual support within the Division against outsiders (the Ministry of Health). The RHA and the Ministry being out there and therefore a potential object of vilification. This impression of us (the hospital) versus them, the outside "fundholders" and policy makers came through strongly in other items which arose for discussion at this meeting.

There are a number of factors of significance within the hospital in regard to the implementation of the casemix system and its related technology. A key driver of the current, in early 1994, implementation effort is the external pressure being applied by the RHA and the Ministry with regard to the targets set for the adoption of the "full" purchaser provider split and the advent of contracting for health services. A number of "scares" have been reported in the regional and national media (Waikato Times 31st Aug, 1995 and 1st Sept, 1995 and Hamilton Press 17th Aug, 1995) in regard to the imminent or eventual loss of facilities of the established health providers as the contracting of health services and consequent improved "efficiency" within the system takes effect.

Despite reservations contracting has gone ahead with a certain amount of flexibility on each side. Not all contracts are as yet on a volume basis, but a significant proportion of the main surgical areas in the CHE are now on DRG based contracts. An example of the nature of the contracts would be as follows. The RHA would specify a certain area of health provision. The objective would be to establish a relationship with a hospital which would guarantee it a price per case at a level which recognized the services performed by the health provider. The RHA might for example, guarantee to the hospital a minimum of 500 cases per year of normal vaginal deliveries. It might specify that a given set of procedures -laboratory, x-ray, ultrasound, and the like - would be performed by the provider, and that the patients would stay no more than two days. Given these conditions, the hospital would be asked to offer a contract for these cases at a specific price. Without information of the kind produced by a casemix system, and DRG coding, this would be very difficult. With the casemix information, the hospital management are able easily to construct a typical case scenario in terms of the various services required by these patients and estimate a price.

Within the contracting process this might be compared to the prices quoted by other health providers, but as a minimum the RHA will have some comparable DRG data from other providers within New Zealand at an organisational and aggregate level. International comparisons might also be made. This is particularly likely to be with Australian hospitals since the decision by the Health Ministry here to adopt an Australian version of the DRG coding structure.

HW has begun reporting, since 1st July 1995, revenue and cost figures in each division in some detail. In some cases this provides information by individual ward. Though these data

are still based on some estimated numbers it is a much more detailed picture of resource use and performance than had been available previously. Individual specialties can be evaluated for 'profitability' and the resulting analysis can assist in determining the level of prices which would be necessary to support each of the clinical services. In operating in this 'product-line', 'profit centre', environment the management of the CHE is aware of the need to develop projections of both costs and revenues for each service.

The use of casemix and the DRG technology can be seen to be central techniques in the process of inscription and translation. DRGs enable the classification of complex medical procedures and render the work of clinicians and other health professionals visible and manipulable from a distance.

In Latourian terms the Finance Division takes on the role of a centre of calculation. Though projects and activities are increasingly decentralised, data are cumulated and processed at the centre. Other writers (Robson, 1992) have recognised the role of accounting in providing management with the ability to amass knowledge at a central point. It can be argued that this enables management to observe, through a process of inscribing, aggregating and reporting centrally, activities carried out in diverse locations throughout the organisation. Budgetary control techniques are perhaps the most obvious accounting technique which illustrate the use of these practices within organisations.

8.4 Diagnosis Related Group (DRG) Coding

The coding of patients treated at Waikato has been carried out for some time in accordance with an international clinical coding system developed in the US (ICD.9.CM), and also used in Australia and the UK. This system has a very comprehensive structure consisting of groups of codes covering all clinical areas. Approaching 100,000 codes are available within this system. Currently HW is seeking to code all inpatients, and attempts are being made to extend the coding to outpatients also.

The Diagnosis Related Groups (DRGs) classification that has been used in New Zealand from the 1 July 1995, is the Australian National Diagnosis Related Groups, version 2.1, referred to as AN-DRGs. HW coding staff have produced a guide to DRG coding which is intended to

provide an outline of the coding process for clinical staff and primarily clinicians (HW DRG Info., 1995). This classification is based on the codes allocated to diagnoses and procedures recorded on the Inpatient Front Sheet, and documented within the medical record.

The coders often refer beyond the front sheet reviewing supporting documents such as biopsy results, operation reports and progress notes. The primary responsibility for recording diagnoses and procedures lies with the treating medical officer, and not the coding staff. The booklet calls for '... a joint effort between both the treating medical officer and coder ... to achieve complete and accurate documentation and code assignment. *Incomplete recording may result in an episode of care being allocated to an inappropriate DRG.*' (HW DRG Info.p.3)

The responsibility of the clinician in providing adequate medical information is given a good deal of emphasis.

The diagnoses, injuries and procedures recorded on the Inpatient Front Sheet should accurately describe the *complete clinical picture* of the patient, that is, why they were admitted and how they were treated. (Ibid., p.4, emphasis in original)

A series of guidelines are presented to reduce any confusion over the manner of recording the diagnosis and what constitutes material information in that regard. The principal diagnosis is defined and additional criteria are specified with some care.

Symptoms, signs and ill-defined conditions should not be recorded as the principal diagnosis when the underlying cause has been diagnosed. They should only be used as a principal diagnosis if their aetiology could not be determined, or they were severe enough to warrant special treatment/care, or they could have been due to two or more conditions.

Multiple conditions: If the patient was admitted for multiple reasons, the diagnosis which should be selected is the one which required the most intensive utilisation of resources or the one for which a definitive procedure was performed.

For multiple injuries the most severe injury is recorded as the principal diagnosis.

For multiple burns the highest degree of burn is sequenced as the principal diagnosis.

Complications that arise after admission should not be designated as the principal diagnosis even though it may require extensive use of resources.

However, if a patient was admitted for treatment of a complication of a disease (eg anaemia associated with a malignancy) that complication should be recorded as the principal diagnosis and the original condition (in this case malignancy), should be coded under secondary conditions.

Generally, chronic diseases should not be documented as a principal diagnosis as the acute manifestation is generally the reason, after study, to be chiefly responsible for occasioning the patient's admission to the hospital for care. It follows then, that if a patient has an acute condition and a chronic condition, the acute condition is listed as the principal diagnosis, and the chronic as a secondary condition. (The exception is tonsillitis with a procedure) (Ibid., p.6, emphasis in original)

Secondary conditions are also carefully defined. They include any conditions that:

existed at the time of the current admission (co-morbidities), or
that arose during the patient's stay in hospital (complications), or
that affected the patient's treatment and/or length of stay by greater than one day

Complications or co-morbidities are defined as additional conditions which affect patient care in terms requiring:

clinical evaluation (including diagnostic testing, consultation and observation) treatment
diagnostic procedures
extended length of stay
increased nursing care and/or monitoring

Conditions that are an integral part of a disease process should not be listed for coding. Symptoms should only be listed if they are not explained by other recorded conditions. Abnormal investigations (laboratory, x-ray, pathologic and other diagnostic results) should not be listed as secondary conditions unless they are of clinical significance, receiving treatment or affecting the treatment care plan and/or length of stay. For example, a slightly raised white blood cell count that is found incidentally on a blood test should not be listed if it is not treated or followed up in any way, and it was not the reason that the blood test was performed. *If at the time of discharge, a diagnosis is probable, suspected, likely, questionable, possible or still to be ruled out', the condition should be stated as if it existed or was established. This is preferable to vague statements such as abdominal pain.* (Ibid., p.5, emphasis added)

It is interesting to note that there is both an attempt to exclude the trivial but also to avoid the possibility of episodes of care finishing inconclusively. Clinicians are implored to state a single principal diagnosis even if they remain uncertain at discharge. Similar sections define and specify the recording of medical procedures in an attempt to ensure DRG relevant data is captured.

All significant procedures undertaken from the time of admission to the time of discharge should be listed. (Ibid, p.9)

The definition of a significant procedure is one that:

- * is surgical in nature
- * carries a procedural risk
- * carries an anaesthetic risk
- * requires special facilities or equipment available only in an acute care setting

The principal procedure should be sequenced first. This is the procedure that was performed for definitive treatment, rather than for diagnostic or exploratory purposes, consumed the greatest amount of hospital resources, or that which best matches the principal diagnosis. Procedures that could not be completed should be described to the extent carried out, with a notation of the unsuccessful or abandoned procedure.

The main variables which determine the allocation of an episode of care to a DRG include:

- 1 Principal diagnosis
- 2 Procedure codes
- 3 Secondary diagnosis
- 4 Age and gender
- 5 Discharge status

See figure 8.1 for a diagrammatic representation of the logic of the AN-DRG medical coding system. The diagram gives only an indication of the complexity of the medical coding process. Once the care episode has been identified to one of the major groups of major diagnostic categories (MDCs) the process continues to allocate the event to one of the several hundred DRG groups. This is a process which involves a joint effort between medical coders and clinicians. The logic of allocation to MDC and DRGs is clear from the diagram. Once the principal diagnosis is ascertained the process of allocation to the correct MDC is relatively straightforward. This does not really give a fair picture of the difficulty of combining principal and secondary diagnoses and treatment data in order to allocate the episode to the correct DRG.

The coders require a good knowledge of medical procedure in order to complete this task satisfactorily. Indeed both in the US and Australia medical coders qualify by completing an undergraduate degree, with significant medical emphasis. The coding process begins with the completion of the medical records by the clinicians, and is only completed by the application

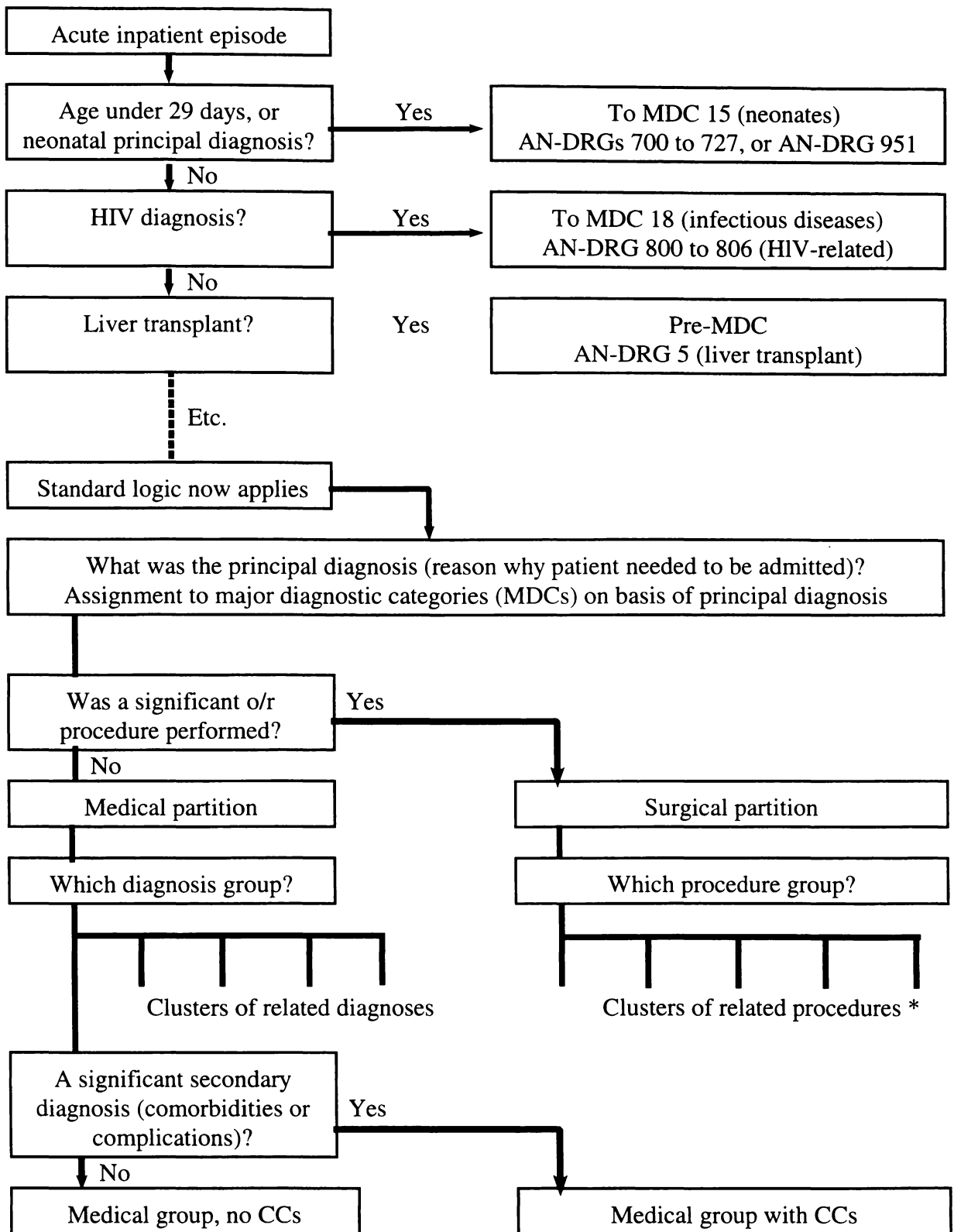
of the coder of the episode to a very specific medical classification, the DRG. This frequently entails an examination of the medical records in some detail and may involve consultation with the clinician to clarify aspects of the diagnosis. The medical records often run to several pages and may involve the coder in the application of a good deal of judgement to translate the often brief and idiosyncratic description of clinicians into an appropriate DRG.

Having observed the coding process at HW it is also apparent that the coders regard their activity with a sense of great sincerity. They regard their activity as one of significance and regard their loyalty to be to the true inscription of the medical episode. The staff are strongly independent and appear quite ready to approach and if necessary challenge the clinicians as to their diagnoses or aspects of the medical records that are ambiguous. In this respect the medical coder is in a position which is analogous to that of the auditor and certainly equivalent to that of an internal audit function. The coders see their accountability to be at least as much to the external funder as to H W.

I came over [from Australia] to New Zealand. It's a great opportunity for me. Coding is much more formalised in Victoria... I did my degree in coding and have a few years experience... My job is to get the accuracy that the funder requires. I'm not here to accept what the clinicians say. (Interview with medical coder, 14th February, 1995)

Job satisfaction in that sense is in finding inaccuracy in the medical record and faithfully recording the episode of care to the appropriate diagnostic classification.

Often the challenge in the job is confronting the clinician with a sloppy medical record. Other times the problem may be a simple omission. (Interview with medical coder, 14th February, 1995)



* the surgical partition also takes into account significant comorbidities or complications

Figure 8.1: Logic of the AN-DRG System
(adapted from HW DRG Info.p.15)

Table 8.1 indicates the manner in which the DRG coding system would work in a relatively simple case. In this instance a 24 year old male is admitted for treatment of a broken arm.

Table 8.1: Simple DRG Illustration

Less Specific Diagnosis	More Specific Diagnosis
If the clinician records the following: * Fracture of arm * Reduction	If the clinician records the following: * Compound fracture of the radius and ulna,.... * Open reduction with internal fixation
Then the treatment will most likely be coded as: * 818.0 Ill defined fracture of upper arm * 79.02 Closed reduction of fracture without internal fixation, arm,....	Then the treatment will be coded as: * 813.18 Fracture, radius with ulna,... * 79.52 Open reduction ..,radius and ulna, with or without internal fixation
The patient would then be allocated automatically to: DRG 442 - Budget cost \$1886.00	The patient would then be allocated automatically to: DRG 415 - Budget cost \$2734.00

(adapted from H.I.M.A. of Australia, 1993, p.4)

The above example illustrates in a very cursory manner the basic elements of the DRG coding system. Each DRG combines a collection of clinical procedures, nursing, nursing supplies, etc. which are typically required in treating the related medical condition. See Appendix 3 for a further illustration of AN-DRG coding.

Some indication of the type of information which the Transition casemix system is able to provide is given in Appendix 2 (see also discussion of casemix in section 7.3). Management has an expectation that casemix information will enable a much better informed use of resources than in the past.

We hope the opportunity to develop clinical protocols and improve treatment procedures will be helped by this casemix information. The project [toward Clinical Budgeting] has as its key objective the provision of information at the clinician level. (Interview with TCB manager, 9th September, 1994).

Decisions on the most effective way to treat particular conditions and especially the optimal length of hospital stay should be facilitated. Data comparing the performance of different clinicians can be provided but it is important to recognise that such reports only indicate areas where further investigation might be worth while to improve clinical protocols (see chapter

7 discussion of clinical budgeting). Differences between the case loads of the individual clinicians may be the explanatory factor. It may be that one doctor tends to deal with the more complex cases for instance. On the other hand innovative practices may be thrown up which could result not only in cost savings but perhaps more effective patient treatments.

8.5 Discussion

In Latourian terms DRG technology may be best seen as a "black box". This is so because, although it is quite possible to deconstruct what the coding system is doing to achieve its classifications the size and complexity of the DRG methodology militates against this. Medical staff in particular specialisms are able to get a fairly accurate idea of the effect of their actions, their diagnoses, on the coding process and ultimately the classification of a patient episode to a DRG. But in instances where a clinician is unhappy with the resulting classification, and the consequent cost and revenue allocations, there is little he as an individual or in concert with others can do.

The system as a "black box" ensures that the actions that people take to provide diagnostic information, when inscribed through the process of clinical coding, produces uniform data within the format of the DRG system. These data also provide input to the clinical budgeting system which it represents in representing clinical activity within the hospital. This illustrates the strength of the translation process.

The processes and actions of the coding committee were not the only way in which the casemix team sought to convince others of the need for and usefulness of clinical budgeting. Medical Coding is central to the funding exercises in addition to its use for budgeting and monitoring and collecting data for clinical protocol purposes. As previously mentioned this meant that organisations outside of the hospital also had a central interest in the success of DRG coding. The Ministry, the Midland RHA and CCMAU all had significant incentives to want the coding system to work well.

As part of the effort to convince the clinicians of the importance of the coding process a pamphlet was produced by the Medical Record Department of Waikato Hospital. The aim was '....to assist clinical staff in understanding the importance of recording accurate and complete

information in the medical record, and the impact of this documentation on the Diagnosis Related Group (DRG) allocation' (HW DRG Info., 1995). The contents provided an overview of the principal elements of the coding system and a number of more specific sections were included to demonstrate the funding implications of incorrect coding or imprecise diagnosis.

The DRG coding committee played a key part in the translation process. Nurses were the most important early allies who were able to act as agents between the casemix team who were regarded with perhaps rather more suspicion. At the same time the active involvement of the senior nursing administrators provided a much broader set of people to spread the message. In this manner the coding process was mobilised, initially progress was made in small projects with problems identified and solved as they arose, gradually more people became interested. Some specialties moved early into the project while others came in partly from a sense of not wanting to be left out. Interests were effectively translated and the project became mobilized.

Though detractors do exist they are more often than not overwhelmed by the collectives which are ranged against them. In the case of clinical coding, there were clinicians who were not convinced of the value or intention of the casemix project. Reservations were expressed in differing ways. Some voiced practical while others expressed philosophical concerns. A senior surgeon conflated the casemix changes with the structural reforms of the health service.

The recent moves to extend medical coding are directly linked to the moves toward a business orientation within the hospital and a market for health services. The new divisional structure and these other changes are just another example of the politics of the reform process. The AHB [Area Health Board] system was never given enough time to work. My feeling is that the AHBs were having positive effects already but the latest reforms have thrown us into further uncertainty. (Interview with consultant surgeon, Surgery Division, 20th July, 1994)

Reservations and concerns such as these were quite widespread among clinicians and other staff at this time. But it is important to be aware of the relative isolation of those holding views. No clear leadership emerged from those who might have provided resistance. Perhaps in part because their views were not homogenous but also because of the strength of the system and technology ranged against them. Increasingly they were enrolled into the network. Their diagnoses were examined and coded. They would be cajoled by particularly their nursing colleagues to provide more and more accurate diagnostic assessments where there was room for mis-coding. They would be approached by the coding people where any queries remained.

Enrolment in the system, as part of a collective with the DRG technology, became almost a

matter of course. In the case of medical coding not becoming a contributor to the system was to prove to be rather difficult. In Latourian terms this would naturally extend the network, solidify the system and the facts produced. The technology would provide more and more inscriptions, which could be further used by the casemix team to enrol other human actors into the system, and extend the network further.

8.6 Concluding Comments

This chapter has described in some detail the characteristics of DRG coding, the implementation process at the hospital and an indication of the uses to which the resulting information may be put. In this chapter there was an emphasis on the use of DRG data for contracting purposes.

The medical coding systems and accounting techniques adopted as part of the casemix system at HW represent powerful "black boxes" which gave much of the impetus to the spread of the casemix system. These technologies contributed to the spread of ideas and facts while resisting "modification". As a consequence I have focussed my research on describing these objects of technology.

The chapter has sought to describe the strength and role of such "quasi-objects" in influencing the social/culture within the organisation. This is not a functionalist view in the sense that I wish to hold up these systems as producing the "best" information and enabling "better" decisions. My focus is on the manner in which such processual developments, such as are constituted by casemix systems, insinuate themselves within organisations. Such projects necessarily include mixtures of people and machines/technologies. Though not entirely deterministic in nature the development of such networks may be heavily influenced by the introduction of black boxes. These quasi-objects typically consist of layers of objects stacked one on another presenting any human actor with some difficulty in challenging any resulting "inscriptions".

Together with other devices the use of accounting techniques may be seen as a central part of the process through which change is made acceptable within the organisation. Supporters are enrolled into the change process in part by being exposed to the accounting inscriptions which

are used to represent the cost and profit "reality" of their unit and the whole organisation. The research process has involved detailed investigation on a case by case basis to enable a thorough description of the accounting techniques being put in place.

In the next two chapters more empirical data will be provided in order to indicate the particular role played by accounting and other information technology in the casemix implementation process. The next chapter will consider some aspects of the casemix system in detail. The design of reports to different levels of management and for differing parts of the organisation are considered along with a central feature of the patient costing system, that involving the use of 'Relative Value Units' (RVUs). These RVUs play a conventional management accounting role in the clinical budgeting system in enabling the use of standard costing and variance analysis.

Chapter 9: The Construction of Patient Costs and The Management Reporting System

9.1 Introduction

This chapter provides further detailed description and analysis of the casemix technology in use at the research site. In this chapter the implementation of clinical budgeting through the Transition casemix system will be examined by describing some aspects of the casemix system in detail. The design of reports to different levels of management and for differing parts of the organisation are considered along with a central feature of the patient costing system, that involving the use of 'Relative Value Units' (RVUs). Though the experiences of people within the hospital with the casemix system will also be considered the focus will be on the Transition system and associated features of the accounting technology.

Some of the characteristics of the casemix system are limited by technical aspects of the software package. The availability of certain modules within the package, such as the ability to report performance against standard costs, may be seen to encourage the development of some styles of cost information and reporting rather than others. This chapter aims to explicate such developments and show how such system change affects work practices within HW. Organisational members increasingly provide 'accounting' data in the course of their normal work activities. Casemix data is collected as nurses record patient acuities in order to provide evidence of their daily activities. Clinicians in completing patient medical records record diagnoses which are later coded and transformed into electronic representations.

The structure of the remainder of the chapter is as follows. The next section of the chapter reviews the concepts of accounting as inscription and the idea of "action at a distance". The next section outlines the processes through which accounting data are passed in the creation of patient costs. This section includes discussion of the Yale Cost Model and the significance of relative value units in the construction of clinical costing information. The following section describes the nature of some of the casemix reports which are generated at HW. Particular emphasis is given to analysing the nature of standard cost variance reporting. This is followed by a short discussion section which draws out the theoretic implications of the positioning of the hospital's finance division as a centre of calculation in relation to the casemix information described in the earlier sections. A concluding section provides some final comments.

9.2 Accounting Inscriptions and "Remote" Control

Robson (1991, 1992) has used aspects of Latour's ideas to structure his discussion of issues relating to the UK standard setting process. Robson (1992) concentrates attention on the concept of inscription and the role of accounting data in providing, at least the perception of control 'at a distance', to managers of an organisation. The attributes¹ of accounting data as inscription are crucial to the TCB project as management seeks to establish 'centres of calculation', process the accounting data and produce inscriptions in order to cumulate knowledge at a some central point within the organisation.

All the distinctions one could wish to make between all these domains (economics, politics, science, technology, law) are less important than the unique movement that makes all these domains conspire towards the same goal: a cycle of accumulation that allows a point to become a *centre* by acting at a distance on many other points. (Latour, 1987a, p.222, emphasis in original)

Latour regards the process by which "centres of calculation" are established as central to the construction of knowledge and power. His descriptions of the use of techniques of action at a distance to accumulate "power, knowledge, profit or capital" (Latour, 1987a, p.223) bear close relation to the intended objectives of the implementation of traditional accounting control systems (Robson, 1992).

Accounting techniques give the principal the potential ability to control at a distance. Managers and owners make use of budgeting and reporting techniques to give an appearance, at least, of "remote" control.

If knowledge is oriented towards acting upon a remote setting, then it is produced and sustained not by "true" correspondence but by its power in securing long-distance control, through the provision and maintenance of networks for the gathering, transmission and assimilation of *inscriptions*. Inscriptions *translate* the elements of the context. (Robson, 1992, p.691)

Robson chooses to structure his discussion of distant control around these two concepts of 'translation and inscription' (see also Foucault (1977, 1980) for an explanation of these 'power effects' (Foucault, 1980, p. 127) of the accumulation of knowledge. Though this section is concerned to argue the attractions of accounting as a mechanism for providing "distant" control, it must not be concluded that the exercise of such control is rendered unproblematic. The use of accounting inscriptions as a medium of control does not guarantee that the controller can predict the outcomes of the process with certainty. Frequently unintended consequences more significant than intended ones will result from the actions and reactions

which are set in train by the control process (Giddens, 1984, p. 293-297).

The term translation here usefully suggests the role of distance: translation signals the notion of movement or displacement from one context to another. Therefore, for the present purpose, distance provides the basis for a distinction between knowledge and practice:

... practice is whatever people do in the setting to be acted upon: knowledge whatever is mobilised to act upon the setting (Latour, 1988a, p.160).

In this formulation, therefore, the problem of truth-correspondence is supplanted by that of action. The conditions for strong explanation become not truth but *power* to act. Hence the preference for "strong" explanations: these provide the *most powerful* explanations through which to act upon all relevant contexts. Within Health Waikato the casemix accounting system provides a potentially powerful inscription device. Representations of clinical episodes are "taken" into the Transition system, explanations are enabled and managers particularly are provided with the power to act.

9.3 The Construction of Patient Costs

Though there is considerable interest in the use of the Transition data base to provide information to assist in the construction and monitoring of clinical protocols, most applications have concentrated on the use of DRG classification for funding purposes (prospective payment systems in the US). (Chapter 8, particularly sections 8.2 and 8.5, dealt in more detail with various aspects of the implementation of DRG coding at Health Waikato).

... the original motivation for the development of DRGs was to serve as a basis for the identification of cases in a utilization review and quality assurance (QA) program in hospitals (Fetter, 1991, p.4).

The QA and utilisation functions represent the original intended use of the DRG methodology. But the overwhelming interest has been on the cost information which can be provided using casemix systems which use DRG and related classification systems. The original group responsible for developing the DRG technology through the construction of the Yale Cost Model was led by Robert Fetter.

Determining the cost of care delivered to individual patients in the acute care hospital is a difficult task.

The set of goods and services utilized in the diagnosis and treatment of illness is a complex mix of resources whose production involves the use of many shared services. Keeping track of all the bits and pieces is a daunting task in itself. The allocation of indirect costs can only be approximated given the complexity of the support services and the circularity involved in their use. (Fetter 1993, p.1)

Though Fetter was largely responsible for the design of the initial model he adapted quickly to the use of the model for accounting purposes rather than the intended quality assurance tool (see discussion in Fetter, 1993). The identification of the complex array of support services and indirect costs and resources to individual patients is problematic. Even activities relatively close to the patient provide problems. Nursing services on any ward are shared among a variety of patients with differing needs.

In the Surgery Division at HW nurses report at the end of each shift the nursing activity devoted to each patient. These data are used within the case-mix system to provide information on the use of actual resources against budget. It is increasingly felt at HW that the current environment of competitive contracting with the Midland RHA for the provision of services to the community provides a tangible threat to the hospital and certainly some of its individual service units. The DRG and patient cost data being compiled within the casemix system is regarded as vital by a number of HW managers, in order to identify and track the use of resources effectively among patients and ensure the hospital remains viable.

... this [TCB] project is crucial to our managers information needs. Clinical coding combined with the Transition system will make it possible to identify product lines and profitability across not only the Divisions but down to individual DRGs and below. (interview with TCB manager, 9th September, 1994)

Many hospitals choose to produce all the services required by their patients. This tends to result in a very complex organisation in the typical public hospital where a large number of functional units provide a vast array of services to patients. Units producing meals, pharmacy services, laboratories to conduct a wide array of simple and sometimes complex tests, scanning and imaging procedures, a variety of special care services, and many different ancillary support services.

The surgical theatres alone represent an extremely complex series of activities with many shared resources. This kind of environment requires an approach to costing and management accounting and reporting which is flexible and comprehensive with respect to all the resources which must be managed. The Clinical Budgeting Casemix project at HW is intended to provide an information system which covers the whole organisation with sufficient flexibility

to provide a broad range of management reports at different levels of aggregation.

The delivery of health services in this environment is at least a two stage process, perhaps three or four. We might, using the two stage model, envisage the following process. At the first stage, the various functional units produce the variety of goods and services required while at the second stage, these resources are assembled into individual packages as ordered by the care providers for the diagnosis and treatment of each patient. This is not unlike the familiar functionalist view of costing systems applied through the Activity Based Costing (ABC) literature (Cooper and Kaplan, 1991; see also two articles by Cooper on "The Two Stage Procedure in Cost Accounting - Parts 1 and 2, 1987a and 1987b). Indeed many pre-ABC, or "Traditional" costing systems were also built around a two stage allocation process. In order to determine cost of care for any patient both the individual production processes must be costed as well as the final bundle of products and services consumed by the patient. Again there are very close similarities between this image of the delivery of health care with the conventional view of the provision and costing of manufactured products and services.

In a manufacturing setting the method commonly employed for costing products may be labelled as a "bottom-up" process. In this manner costs are built up by collecting data on each product or component. For each unit of output information sources are constructed around blueprints, bills of material, and process flow diagrams. The inputs required are specified in considerable detail and costed or priced accordingly, the only exceptions being low value items which are often not traced by the costing system but are treated as overhead and their cost allocated to products using some appropriate though arbitrary basis.

In an ABC system a variety of "cost pools" and "cost drivers" would be used in this process. Final products, or outputs are also given precise specifications, manufactured components and units being produced typically to specific tolerances and levels of quality. Typically materials and processes are costed individually to produce standard costs. These are combined to estimate the cost of producing the final product or output. To reproduce this approach in a hospital, each kind of intermediate product - medication, x-ray, surgical procedure, lab test, and the like - would need to be the subject of a standard cost determination. The various kinds and amounts of labour and materials used and the equipment utilized would be valued using a standard methodology. Support services required would need to be specified also. Finally the array of activities would be consolidated into a standard cost for the procedure. Table 9.1

shows a typical standard cost estimate for nursing in a surgical ward at HW.

**Table 9.1: Nursing Standard Costs Using RVUs and Indirect Cost Allocation:
Showing 2 Different Levels of Acuity**

Cost Category	RVU	Acuity level - 1	Acuity level - 4
		Standard Cost	Standard Cost
<u>Variable Direct</u>			
Nursing	90.00	25.90	207.14
Dressings	10.00	5.30	26.44
Laundry	1.00	8.76	8.76
Drugs	4.00	1.78	22.22
Supplies	1.00	6.83	13.31
<u>Variable Indirect</u>			
Energy	1.00	3.76	3.76
Staff	1.00	32.81	32.81
Pharmacy	1.00	4.00	4.00
Supply	1.00	19.46	19.46
<u>Fixed O/H</u>			
Nurse Admin.	1.00	11.39	11.39
Clerical	1.00	4.82	4.82
Leases	1.00	18.89	18.89
Repairs	1.00	3.50	3.50
Management	1.00	35.67	35.67
Total		182.87	412.17

(Source: adapted from Health Waikato: Transition DCM Module)

The wide range of goods and services employed in a hospital means that literally tens of thousands of standard costs for individual procedures would have to be produced in order to describe all the different activities of the hospital. A considerable data collection exercise would then be required to track the goods and services utilized during the patient's stay, and record these against each episode of care. Finally it would be possible to estimate the standard cost of these patient episodes by applying the cost elements required to provide each item of service. Such an exercise would involve a massive, though possible, data collection and verification exercise. The speed at which medical technology and treatment regimes are changing in many fields would combine to make this a very expensive information system

In order to make "confident" decisions the accountant, manager or medical staff person would also need to be able to compare this information with actual costs incurred in treating individual or perhaps groups of similar patients.

In an industrial firm, this is accomplished by replicating the process by which standard costs were determined using actual expenditures for labour, prices paid for the various materials employed, quantities of labour and materials used, rates of equipment utilization actually experienced, and the costs incurred for various overheads. Actual results and output volumes are then compared to expectations and variances are analysed to determine the source of the differences uncovered.

Detailed variance analysis may be used to identify variances to general input features: changes in factor prices; volume variances from forecast; and differences in the utilization of labour, materials, and/or manufacturing equipment. The results of such analysis give managers initial indications of areas of productive activity of resource use which might be worthy of further investigation. Such systems are widely used to provide the benefit of exception reporting and to provide cost control, in accord with expectations and agreed budgets

Table 9.2: DRG Variance Analysis

Types of Variance
Factor Prices (labour, material)
Volume (patients treated)
Case Mix (types of patients)
Efficiency (use of input factors)
Treatment Effectiveness

(Source: adapted from Health Waikato: Transition DCM - Flexible Budget Report)

The variance analysis process in a hospital is likely to be rather more complex than in the more typical industrial settings. In the hospital setting variance analysis includes the usual price, volume, and efficiency factors. But additional variances (see Table 9.2) due to changes in the product line (different kinds or more complex cases treated than was expected), and differences among physicians in treatment regimes may be most crucial. These differences among physicians and treatment regimes or protocols are key areas for investigation. Management believe that not only may valuable insights on cost behaviour within the

institution be gained, but perhaps much more valuable patterns may appear in the effectiveness of different treatment protocols (see discussion in chapter 7, section 7.3).

9.3.1 DRGs and The Yale Cost Model

The Yale Cost Model (YCM) is designed to model the:

...manner in which hospitals actually operate [in order] to be able to describe this structure and devise a process which would associate expenditures in the various functional units with episodes of care delivered to patients. (Fetter, 1993, p.3)

The model uses a "top-down" methodology, to estimate cost per patient or for groups of patients for whom similar processes of care are employed. Statistical procedures are used to combine similar treatment categories in order to reduce the complexity of the information collection exercise.

The result is a functional method which builds a logical relationship among the various activities of the hospital giving one a flexible and relatively simple tool to use in describing and understanding of behaviour in the hospital for any given period. (Fetter, 1993, p.3)

Clearly any model of this type must lose some accuracy in order to present a simplified picture. Though the model has critics it has proved remarkably resilient to criticism. The DRG system which articulates with the YCM is widely used and has undergone a number of revisions in order to update the coding structure and represent more appropriately the underlying episodes of care.

Figure 9.1 provides a diagrammatic representation of the structure of the DRG costing model. The approach requires that a period is identified during which records are available describing the patients treated and expenditures are also available in appropriate detail. The problem is to provide a system capable of matching the expenditures with the patient treatment episodes. The system must account for all expenditures and more particularly be able to make sense of the results obtained.

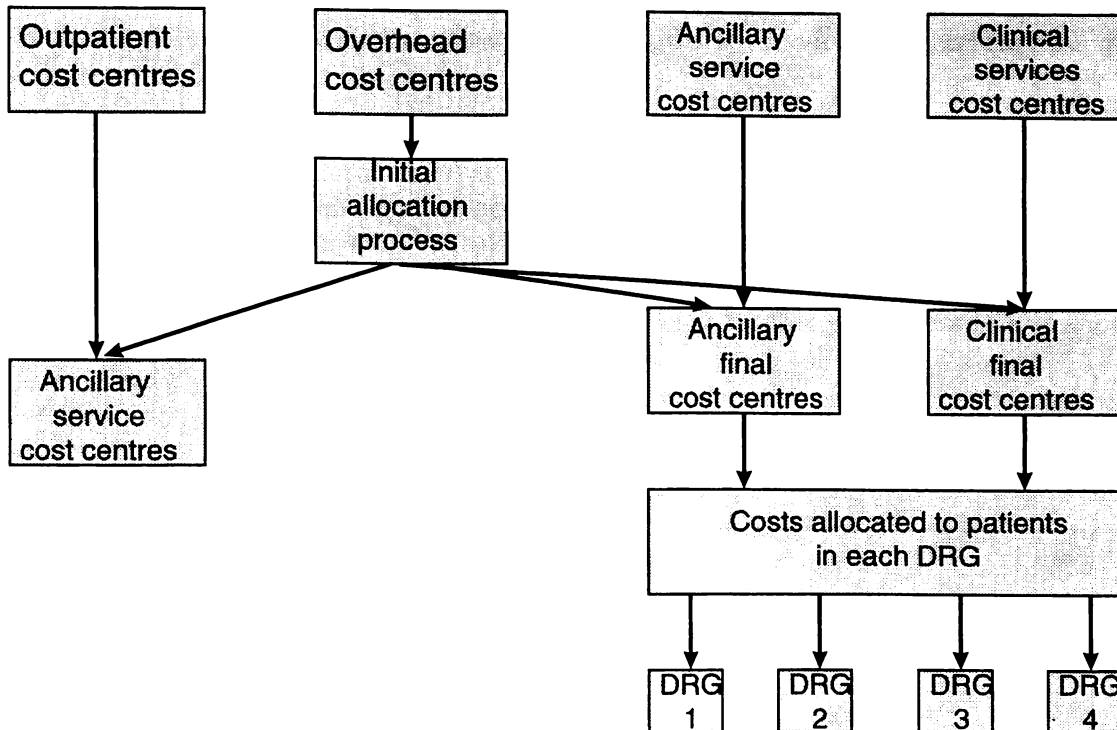


Figure 9.1: The DRG Costing Model

(adapted from Fetter, 1993)

The general ledger (GL) of the hospital is a record of expenditures for any period and is the starting point for patient costing. In order to reflect accurately the patient load served, the general ledger must be kept on the accrual method. Thus, for example, only materials actually used during the period should be included, not the purchases made. In order that the various functional units can be compared, it is also necessary that a standard chart of accounts be used to record expenditures in each cost centre. This environment was not available within HW in 1991 when an interest in improving the management information systems within the hospital became a serious objective of senior management. A new general ledger package was implemented and a series of projects started to improve the quality and reliability of the accounting and other information systems within the organisation were commenced (Some of these other developments are described in chapters 7, 8 and 10).

Hospitals will typically differ in the way they define cost centres for accounting purposes, as typically different companies in the same industry are unlikely to have identical internal management accounting systems. Cost centres are assigned to one of four categories depending on their role in treating inpatients.

1/ Those centres which do not involve any inpatient treatment are identified. These might include: outpatient clinics; home health care services; interest expense etc..

2/ Those cost centres which provide support services but do not deliver care or services directly to patients are defined as overhead or indirect centres. Administration, maintenance, housekeeping, laundry, and the employee's cafeteria would be typical examples. An example of the cost centres used for this purpose at HW is shown in Table 9.3.

Table 9.3: Typical Overhead Cost Centres

Corporate Human Resource	Obstetrics Admin
Corporate Finance	Administration
Corporate Commercial	Medical Information
Corporate Support	Distribution
Medical Records	Visual Communications
Continuing Education	Information Services
Surgery Admin	Library Services
Health and Safety Service	Medicine Admin
Laboratory Admin	Facilities Admin
Facility Costs	24 Hours Management
	Education Centre

(Source HW Finance Division memo, 24th July, 1995)

3/ Those centres which produce ancillary services used in diagnosis and treatment such as laboratories, x-ray, MRI and pharmacy.

4/ Clinical services which house and treat patients directly are specified, including operating theatres and wards.

The initial cost centres (ICCs) include all the centres whose costs it is desired to use for patient costing. We then specify as final cost centres (FCCs) that subset of the ICCs which deliver services directly to patients. These final cost centres will "absorb" through an allocation process all the costs incurred in the overhead or indirect cost centres. Thus, patient costs will be described in terms of direct cost centres only, but each such centre will have been charged a share of the indirect costs. An example of an ICC would be the Blood Centre (see chapter 10 for a discussion of the costing blood products)

So that hospital costs may be compared it is important to establish a set of standard cost centre definitions into which the actual cost centres used in the general ledger may be mapped and which can be the same for all hospitals which it is desired to compare. This usually means that the cost centre so defined will represent the minimum set used to describe any hospital in a particular group. Concerns over comparability in the provision of health services in New Zealand has led to increasing interest in ensuring that cost and other data are collected according to standardised methods (CSC, 1995 and Ministry of Health, 1995).

Traditional cost accounting practice involves the reallocation of overhead or indirect costs to direct cost centres by a variety of methods. Most texts (see Horngren et al, 1994) deal with such procedures under the title of service department cost reallocation. Typical methods include 'direct', 'step-down' and reciprocal. In common with some other methods of overhead allocation this involves the selection of a single measure or "driver" for each indirect or service centre. This driver is chosen on its ability to reflect the use of resource within the operations of the service centre. The cost driver or allocation measure is selected (Ibid) which is felt to best associate costs in that centre with the activities or resources provided to each direct cost centre. For example, the cost centre called General Administration (GA) includes salaries of all administrative personnel, supplies they use, cost of equipment, and any other direct expenditures incurred. Their services, however, are supportive with respect to the ancillary and clinical departments, but also with respect to other functions.

The maintenance department, the laundry, and cleaning all require administrative support. Measures which might be used for establishing the association as between GA and other centres include total expenses, personnel expenses, or number of personnel in each cost centre. The choice depends upon which measure more accurately reflects the utilization of GA services by the various cost centres recognizing that allocations based on any measure can only approximate the actual utilization. It is also important to recognize that often, a support centre will not only serve both direct and indirect cost centres but will consume services internal to itself. Even if this is not the case, within a complex organisation such as a hospital, the allocation process can become rather tenuous. Table 9.4 shows some typical indirect cost centres and allocation measures which are in use at HW.

Table 9.4: Indirect Cost Centres and Allocation Measures

Corporate Human Resource Corporate Finance Corporate Commercial Corporate Support	Corporate Recharge Rates (Individually determined)
Medical Records Medical Information	Patient Throughput
Visual Communications	Measure of Past Use
Facility Costs	Space (based on rental cgs.)
Education Centre Health and Safety Service	Headcount in the direct depts. serviced
Library Services 24 Hours Management Medicine Admin Obstetrics Admin	Total hours worked
Laboratory Admin	Total hours paid (includes holidays etc.)
Administration Surgery Admin	Budget recharge rates
Information Services	Budgeted allocation rate (several cost drivers including: receiving dept.\budget; patient nos.; computer support)
Distribution	Requisition/Purchase orders and no. of items

(Source HW Finance Division memo, 24th July, 1995)

The step-down method (see Horngren et al, 1994) allocates costs sequentially from each overhead centre to all centres. At each step the costs from an indirect department /cost centre are allocated across all other relevant centres, and that centre plays no further part in the allocation process. As the process proceeds some costs will have been allocated to other indirect centres. The process is repeated until no costs remain in the indirect cost centres. In a hospital setting with a complexity of activities, this is likely to involve a many step process. The step method suffers from a basic problem in that the final allocation depends critically on the order in which the indirect cost centres are closed and their costs are allocated. Judgement must be used when deciding on the order of closure. Any changes to the order of closure and allocation, will affect the final result. These differences could be significant. There is no ordering which will produce an "accurate" or "correct" final result.

An alternative method of allocation which provides a mathematically superior result is available. The "reciprocal" method (see Horngren et al, 1994) though more complicated than the step down method is easily manipulated as a computer model. Its execution guarantees the singularity of the final result. Accuracy is still dependent on the ability of the manipulators of the model to provide effective measures of resource use and cost data. The "reciprocal" method is a closed form of the "step-down" approach described above and consists of defining a set of linear equations in which each cost centre's allocation is represented by a set of terms in which the coefficient represents the proportion that each centres' demands or uses of each other centres' resources.

In addition to defining the allocation precisely, this method produces a "traceback" (Fetter, 1993) matrix. This is a table which shows the proportion of costs in each overhead cost centre which would end up in each direct cost centre using the reciprocal allocation model. Thus, we have available the results of an expenditure of one unit in GA as the fraction of that expenditure which should be assigned to each ancillary, or clinical service. This result is not readily obtainable using "step-down" and is very important to the ability of the YCM or Transition to cost patients in a flexible manner.

9.3.2 Relative Value Units (RVUs)

Since some of the direct cost centres serve activities other than inpatients, it is necessary to estimate the proportion of their costs which should be excluded in costing of inpatients. The resources applied to the care of inpatients must be established. If the laboratory serves outpatients then it is necessary to determine the fraction of its costs employed in this regard. If the laboratory resources/services delivered to each inpatient in terms of standard costs can be ascertained, then given the availability of volumes of production in the laboratory, it is possible to determine that proportion of laboratory resource used for inpatients. Each ancillary and clinical service must be treated in a similar manner to establish the portion of resource applied to inpatient services, in order that general ledger expenses for inpatients be defined properly.

An alternative approach is to establish detailed cost information on the delivery of each significant group of services and tests provided within the hospital, whether provided to in/or

outpatients. HW have tended to follow the latter approach. In the Clinical Services Division, detailed costs have been worked out for services such as laboratory tests and blood products. This latter approach makes use of the RVU mechanism within Transition in order to provide a vehicle to readily update cost information as costs change.

The RVU model allows a factor, or relative value index, to be established within the Transition System which represents the relative resource consumed by one activity, test or procedure relative to another. This is similar to another traditional costing technique applied in the establishment of joint product costs. In this technique an index is established by combining a variety of quantitative features of the products produced: size; weight etc. are added to produce a numeric value which is then used to share costs among the group of jointly produced products.

The RVU technique uses a similar approach by setting a relative value or weight for each individual procedure which can be applied subsequently to actual cost data, giving a financial value at future points in time (refer to Table 9.1). This process establishes a system which avoids the problem of fixed cost figures, in a standard costing system, which quickly become outdated as input costs, eg. in the case of laboratory tests, the purchases costs of chemicals change. Once set the RVU spreads costs across the products or services provided on a consistent basis, until the RVUs are adjusted. In this manner cost centre costs are accumulated within the unit and costs of services provided are established on an automatic basis without the need to recalculate charges each period. This is, at least in theory, an added sophistication on the establishing of costs using traditional standard cost methods.

In the traditional standard costing mechanism costs are set from a detailed prescription of the resource consumption of individual products or services, in a similar manner to which RVUs are initially established. Though standard costs are fixed in financial terms, as a dollar value, they provide a useful benchmark of performance for a set period until updated. Variances can readily be identified as the result of price changes or changes in efficiency, etc.. Though similar analysis can produce comparable information from the Transition system using RVUs, additionally the RVU approach enables cost figures to automatically be updated as input costs change. This is a particularly crucial feature of the system when dealing with very high numbers of identifiable tests and procedures, where the value of individual items is small and the activity is relatively highly automated. The RVU technique seems well suited to the

clinical support service area, where services are often very low value and procedures frequently highly repetitive.

Problems may arise with attempts to apply these techniques to less repetitive activities. The clarity of the system may also be compromised by the tendency for charges to change from period to period as unit cost figures vary across accounting periods. In a standard cost system the certainty tends to be in the standard cost itself, which is objectified as a dollar value and is therefore relatively amenable to the decision maker. The nature of the RVU mechanism means that the RVU itself has no intrinsic significance, it is possible only to make rough judgements on the basis of whether one RVU appears appropriate in comparison to another, ie. does test A use the same amount of resources as test B. The RVU technique will be illustrated further with reference to the evaluation of nursing acutities in section 9.4.1.

At this point in the costing process the following elements have been described:

- Total expenditure by cost centre
- Share of indirect costs assigned to each final cost centre
- Relative Value Units for each service function

In addition to cost information on the services provided within both support and clinical areas it is also necessary to collect "accurate" and reliable data on the volumes and treatment regimes of individual patients. Individual records for each patient treated during the period must be matched to the cost information which provides a measure of the resources consumed. Given that these records are ordered by date of discharge, it follows that a potential inaccuracy is introduced as some patients would have been admitted to the hospital before the accounting period began and some patients will not have been discharged when that period ends. Within the Transition System it is assumed that these two effects balance so that the expenditures are a reasonable representation of those to be associated with discharged patients. There is no attempt to account for work in progress changes. The longer the period covered the more accurate will be the accounting since patients in the above categories will constitute a small proportion of the total.

If the patient records include detail with respect to laboratory services delivered and there exists a measure of the cost of each service - standard cost, RVU charge, for example - then

the cost of these units of service delivered to each patient can be determined. In effect the RVU approach divides the dollars expended in the laboratory by the weighted units of service delivered yielding the cost per unit of service. Within the Transition accounting system this is done separately for each category of costs which were entered from the general ledger. If, for example, labour costs, material cost, and other costs were entered separately, then the cost per unit of service for all three categories could be calculated. These unit costs are calculated separately for direct and indirect costs. The result of the above calculations over all the ancillary services produce a data base of unit costs for use in the costing of patients.

The cost per unit of clinical services can be achieved in a similar manner. However, in calculating costs in the clinical areas it may be more accurate to separate clinical costs into different classes or cost pools depending on the measure which best represents the relationship between such costs and patient care delivery. For example, nursing salaries in each of the clinical services could be allocated to patients based on weighted bed-days. If the hospital maintains a nursing acuity system which assigns a value each day to each patient depending on that patient's relative need for nursing services then costs can be attached to these nursing weights.

Assuming the weights used range from 1 to 4. Then for all the patients in the database, the weights associated with each stay would be added. A patient who stayed for 5 days might have accumulated nursing weights equal to 14. These weights added up over all patients treated in each unit during the accounting period would give us the total nursing weighted days delivered. Dividing this value into the total nursing costs for that unit would yield the cost per unit of nursing service. This could be done for each nursing unit or for the hospital as a whole depending on the detail with which records were available. Similarly, the cost per unit of service could be obtained for every other element of cost entered separately for each clinical cost centre. This process results in a table of unit values which can then be applied individually to the units of service recorded for each patient. This procedure used at HW will be described in detail in section 9.4.1.

9.3.3 Casemix, RVUs and the Inscription Process

These techniques which are used to represent and [re]present data within the casemix system play a central role in the inscription process. Latour places special emphasis on these processes which are used to transform data once they have entered a system. These devices give particular power to the inscription process, a part of the process which enables the authors of technoscience to present convincing arguments to others.

... the equations produced at the final edge of the capitalization constitute, literally, the *sum* of all the[se] mobilisations, evaluations, tests and ties. They tell us what is associated with what; they define the nature of the relation, finally, they often express a measure of the resistance of each association to disruption. Of course, they are utterly impossible to understand without the mobilisation process (and this is why I did not talk of them earlier), **they are nevertheless the true heart of the scientific networks, more important to observe, study and interpret than facts or mechanisms, because they draw all of them together inside the centres of calculation.** (Latour, 1987a, p.240)

Latour clearly expresses here the central part played by these especially refined elements of the inscription process. The equations of which Latour speaks are the equivalent, within physics or chemistry, of the rules and techniques of double entry, to accounting. RVUs within the Transition package play a similar role in enabling the masses of inscriptions to be managed and [re]presented to management. Within the realm of accounting, actions are delineated by conventions and established rules of accounting procedure. Some of these conventions are indeed the equivalent of the black boxes of which Latour speaks others are still subject to disagreement and controversy (Robson, 1991, 1993).

In accounting as in other soft sciences it is perhaps more common to find the existence of techniques and practices which might be regarded as only pseudo black boxes. Accounting rules and procedures which are widely accepted are only the result of compromise and negotiation. Accounting standards generally fall into this category, being often achieved as a compromise among interested parties and often subject to periodic review. Accounting software packages necessarily must incorporate these accounting conventions and rules to provide believable and acceptable accountings.

In chapter 10 the role of accounting methods in the allocation of fixed costs in the costing of blood products will be explained. Other traditional accounting techniques have also been mobilised in accounting for overhead costs and reaching decisions on the categorisation of expenses as either fixed or variable. The part that these simple rules of accounting play in the

presentation of "facts" within the casemix system should not be underestimated. It is the application of these rules on a repetitive basis which gives accounting its taken for granted nature.

Once the data have been assembled and processed within casemix and the systems which precede it, those numbers which are output take on great significance. It is also as a consequence of the use of such mechanisms as RVUs that, not only can masses of data be transposed within the system, but also the mystery of this system is added to. The formulas quickly take on Latour's definition of "black boxes", the calculations which they invoke are beyond the gaze of all but the most determined observer of the system. While these calculations enable management to exercise "action at a distance" they present a danger to the reliability of the system also. Even with some effort it is difficult to decipher just what transformations are taking place. Where these representations and translations involve cost data decision makers may well attribute behavioural consequences to cost categories without adequate knowledge of the elements which are contained in the numbers.

Within the hospital the casemix system seeks to inscribe aspects of the organisation and its operations which have so far remained unknown to those at the centre, indeed even to those involved at the operational level. The Transition system is able using DRG technology to amass detailed information of the treatment episode of individual patients while providing summary information by treatment, by clinician or by Surgical or Medical Division or ward. Reports and graphs are easily produced to represent activity and efficiency within the organisation. Graphs may display a breakdown of costs within a particular specialism or procedure, so that clinicians or others may see where resources are claimed to have been disposed.

9.3.4 Results by DRG

The Transition patient database can produce various cost reports. If one patient record is processed, then the various units of service will be multiplied by the appropriate unit values in the tables which we have produced above and estimates obtained of the direct and indirect costs incurred for that patient episode. If, for example, the patient record included units of laboratory service using either standard costs, RVUs, or charges, then the value of a unit would

be available and this patient's cost for such service estimated. Similarly, if the patient record contained a nursing acuity value for each day of stay, then the total of these values would be used to estimate the nursing cost. As indicated above, since we have available the "traceback" matrix, it is also possible to calculate separately the indirect 'costs' per unit of service and to trace these by source. Usually individual patient records will not be processed, but groups of records organized according to some useful criteria. The Transition System is designed to process patient records organized into groups by DRG. In this case, the model summarises all the records presented in a group, and, based on this summary, determines the average and total cost of treating patients in this DRG. See Appendix 2 for examples of DRG reporting using data from the Surgery Division of HW.

The greater the detail available via the cost centre definitions the more detail that could be presented in these reports. The indirect cost elements could be further broken down by source if desired. The report can show all or only a portion of the cost elements available. DRG and other casemix data can provide a vast amount of detailed and 'reliable' activity and cost data which a number of managers at HW regard as a 'valuable' source of information, particularly useful for planning and budgeting purposes.

9.4 Management Reporting and the Use of Variance Analysis

Along with the restructuring of hospital management within the new Crown Health Enterprise structure there was also a move to use management reporting to improve the effectiveness of the 'new organisations'. Within the clinical divisions nurse managers were appointed to manage nursing care and also to control the budget of the unit. Management reports were readily available from within the casemix system but were not used widely prior to the adoption of the new managerial culture. The Transition Casemix System is able to report on a number of aspects of performance both of a clinical and administrative nature.

Within the surgery division a number of wards were encouraged to use the unit performance reports generated within the casemix system. These reports are generated to standard format producing traditional budget reports. The formats are flexible so it is possible to adjust the system reasonably easily to reflect local circumstances and preferences. Though it is possible to adjust these reports it is easy to produce management reports from the default set of the

Transition casemix system. The reports are generated by the Department Cost Manager (DCM) module (Transition Manual, 1994), though data are drawn from other modules within the Transition system. Standard variance analysis is used (see for example Horngren et al 1994), though the format of the main performance report might be improved upon. These aspects will be examined later.

The unit reports established provide a typical budget report with a tabular presentation consisting of this month's actual and budget plus a cumulative section for the year to date. An example of the summary page of the report is shown in Table 9.5. The table shows the performance of the Ear Nose and Throat Ward (ENT) within the surgery division.

The ward uses a mixture of resources and activities to carry out its functions. These are indicated in traditional accounting format. Each element of cost is indicated as a separate category. There is also an attempt to separate fixed and variable costs, as direct and indirect cost categories. Indeed the use of traditional cost classification in an attempt to distinguish fixed and variable costs is a serious concern for a number of administrative people within the surgery management team. This concern to be able to separate out those costs which vary with volume of patients treated and those that can reasonably be treated as fixed is partly as a consequence of the contracting regime which has been introduced. This process involving agreements to be reached with the RHA are increasingly taking the form of volume related contracts for specified numbers of clinical procedures or treatments.

Earlier in the health reform process most of the contracts were for a fixed amount to cover treatment of a particular specialism, but did not vary based on throughput. Though this is an interesting area which is crucial to the ongoing success of the CHE, since the securing of future funding is uncertain, it is not of overriding concern to the design and use of the management reports. These unit reports are primarily designed to provide management information (Transition Manual, 1994) for use in guiding the efficient use of resource within the unit and providing a mechanism to control spending against budget.

A number of variances are reported which are of a traditional nature. Again these variances are reported for this period and year to date. The variances will be described in the following section.

9.4.1 DCM Report and Variance Analysis

Page 1 of the report for each Ward (see Table 9.5) is the main summary showing aggregate budget and actual numbers and then analysis of variances. These data are highly aggregated to provide a simple summary performance report. A further seven pages of information (see Appendix 4) provide more detail on several of the main elements reported on the summary report. This is a flexible budget report where volume figures are based on output measures. In the surgical wards the volume measure is primarily based on patient acuity as reflected by nursing volumes. More ill patients require more intensive nursing. Eight levels of nursing acuity are recognised, ranging from an intensive care situation where one patient may require the attention of more than one nurse to a more common requirement of perhaps 1½ hours per day.

Other activities are also budgeted where significant: day cases; out patients and specialised dressings. Consumables are typically allowed for within the value of the nursing activity. Though this procedure does result in an account being taken of all significant outputs or activities from the ward, it does at the same time produce a somewhat strange overall index measure of volume of throughput. Units of volume are recorded on the DCM report, but these numbers may be difficult to interpret since they include a range of activities, of very different values and nature in terms of resource use. This may be true to an extent in many manufacturing settings, where output may consist of a range of products. There is at least one difference however in that the flex in the latter situation is traditionally related to a single factor, more often than not labour or machine hours. In the DCM reports in use at Waikato the flex is a function of the output level of each individual activity.

Table 9.5: Summary Budget Report from Transition DCM for the ENT Ward

DCM 0400 RUN DATE 19 JAN 1995	HEALTH WAIKATO LIMITED DEPARTMENT COST MANAGER VARIANCES - FLEXIBLE BUDGET FORMAT 2039 WARD 1 E.N.T. - 183				PAGE
	DECEMBER 1994		JULY 1994 THROUGH DECEMBER 1994		
	UNITS -----	COST -----	UNITS -----	COST -----	
BUDGET	260	\$ 89,564	8,697	\$ 573,949	
ACTUAL	420	95,134	23,675	562,007	
TOTAL VARIANCE	----- -160	----- \$ -5,570	----- -14,978	----- \$ 11,942	
PERCENT VARIANCE	=====	=====	=====	=====	
	-61.6%	-6.2%	-172.2%	2.1%	
BUDGET		\$ 89,564		\$ 573,949	
VOLUME ADJUSTMENT		-8,683		389,794	
MIX ADJUSTMENT		1,052		-278,264	
FLEXIBLE BUDGET		----- 81,933		----- 685,479	
ACTUAL		95,134		562,007	
FLEX BUDGET VARIANCE		----- \$ -13,201		----- \$ 123,472	
PERCENT VARIANCE		=====		=====	
		-16.1%		18.0%	
VARIANCE ANALYSIS:					
UTILIZATION:					
LABOR EFFICIENCY		\$ -15,510		\$ 166,055	
LABOR PRICE		4,587		28,895	
SUPPLIES		-2,443		-26,495	
OTHER VARIABLE		347		-41,239	
		----- \$ -13,019		----- \$ 127,217	
FIXED COST:					
LABOR		\$ -291		\$ -4,401	
EQUIPMENT		109		657	
FACILITIES		0		0	
OTHER		0		0	
		----- -182		----- -3,744	
TOTAL FLEX BUDGET VARIANCE		----- \$ -13,201		----- \$ 123,472	
		=====		=====	

*** A NEGATIVE VARIANCE INDICATES AN INCREASE FROM BUDGET IN COST OR UNITS

(Source: Health Waikato: Transition Department Cost Manager - Flexible Budget Report)

Partly as a response to the nursing staff the casemix analyst within the Surgery Division carried out some trial adjustments to the activity measures in an attempt to find a measure which produced a better fit, with a simple interpretation of output levels, which was expressed by staff. Part of the trial involved modifying the activity measure on nursing to record an aggregate measure of actual nursing hours applied to patients during the period. This was in line with requests made by nursing staff and might have been expected to produce a simpler report. In effect seven or eight levels of nursing acuity were replaced by a single line based on hours of nursing recorded as applied to patients over a given period. After several months trial the staff decided that the change was of no great benefit (Interview with TCB analyst, 28th October, 1994) and reverted to the original system of recording nursing acuity levels. Though abortive this exercise was nevertheless useful to the casemix team as it demonstrated a willingness to respond to the requests of operational people. In the process the nurses were perhaps enrolled into the casemix project.

The change also provided a useful opportunity to manipulate the Transition system, or the DCM module in particular which had not been used extensively up to this point in the implementation process. In fact the exercise did provide a valuable learning exercise for the casemix people as it revealed some intricacies of the interrelationships within the software which might otherwise have remained a black box. Variance calculations were disrupted for several months because of a failure to completely reverse the changes made to the DCM reporting module. The problem only came to light later when this researcher spent time trying to reconcile the budget variance calculations for two representative wards a few months later.

Each cost item on the budget report is a combination of several different expense items. Within the DCM system detailed "Bills of Material" are used to combine a number of allocated costs which together comprise a single entry within the DCM Flexible Budget Report. Relative Value Unit (RVU) numbers are used to prorate the various cost categories across the various products or output measures.

The RVU nursing categories for a typical surgical ward at HW start at a minimal level of patient acuity. Such a patient is expected to require 90 minutes nursing time over a day. This level of nursing requirement is referred to as a D1 Patient Day, comprising 90 minutes of nursing time, plus between 29 and 30 other cost items, including drugs; dressings, etc. but also depreciation and a share of other occupancy costs. D2 Patient Day comprises 270 minutes of

nursing time plus the other items. The use of RVUs rather than simple standard costs means that each expense item is shared across the products in proportion to the estimated relative use of resource by that activity. The budget cost for the activity is dependent on the relative RVUs and the budget volume throughput. In this system once the RVUs are fixed input price changes, such as pay increases or an increase in drug prices may be automatically adjusted within the DCM system. This is enabled since the Transition System adjusts an increase in an expense item automatically and immediately through the RVU value.

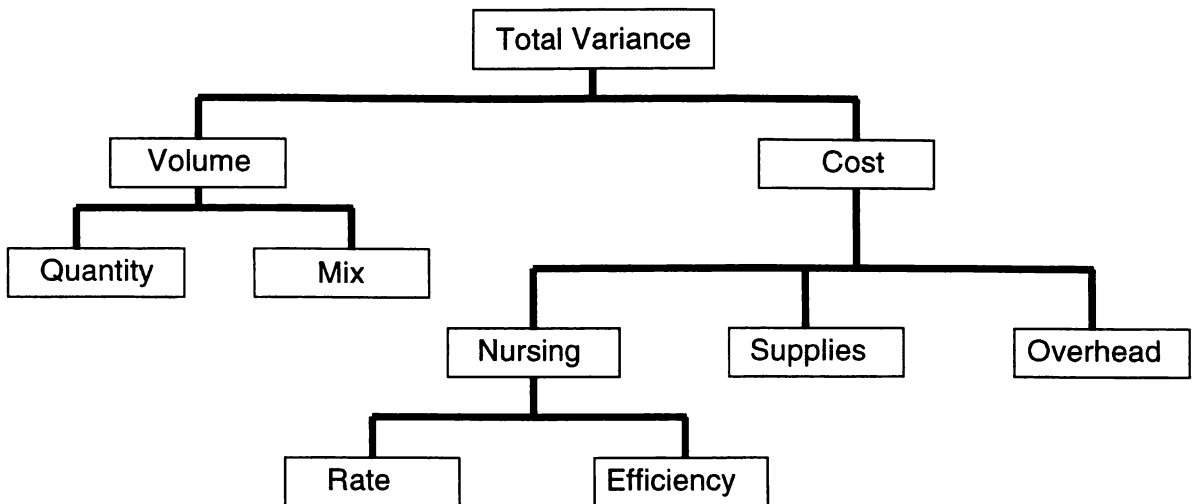
Within the wards of the Surgery Division the budget consists mainly of nursing related costs and clearly one would expect this activity to be a major concern of management and therefore management reporting. As previously mentioned each ward does recognise within the reporting system a limited number of other service/product outputs. These typically include day patients and ward patients, though this will vary dependent on the type of ward and the type of care provided and conditions treated. The Ear, Nose and Throat Ward (ENT) deals with a significant number of cases through outpatient clinics, whereas this type of activity occurs at a much lower level of volume in the Orthopaedics Ward.

In the Burns/Plastics Ward there are a significant number of outpatients but day cases are uncommon. Most of the resources in the Surgery wards are concentrated on treating in patients and consequently performance is very much dependent on the effective use of nursing care within the ward. From a management of resources perspective other outputs are not such significant activities. This is not to say that at certain times the planning and organisation of care programmes requiring significant outpatient resourcing may place great demands on ward resources. In fact it may seem that outpatients treated, or the number of trachostomy dressings applied are a clear measure of output, while nursing acuities are rather less so. While the condition and treatment of an inpatient may determine the intensity of nursing required in a general sense, patients and resourcing varies in a way that will often influence the level of caring required. Nursing acuity is recorded as a function of data which the nursing staff supply on their activities over a shift, not by some process of patient evaluation. As a consequence although patient days are used as a measure of output they simultaneously represent an important area of resource input management.

The performance issues which are implicit within the DCM cost centre reports concern the values and mix of outputs achieved and the efficient use of inputs. Though only costs are

reported since outputs are measured each unit has its efficiency measured on both input and output performance. The report uses variance analysis to detail differences between the original fixed budget, through a flexed budget, and on to actual costs. This process is illustrated figure 9.2.

Figure 9.2: Variance Analysis Model Used in Transition



The total variance records the gap between original budget and actual. The report then shows variances resulting from adjustments based on volume (level of activity or output) and mix (the effect of budget forecasts of the makeup of services being different to actual). At this point we are half way down the page 1 of the DCM report and appear to have concentrated purely on activity/output differences.

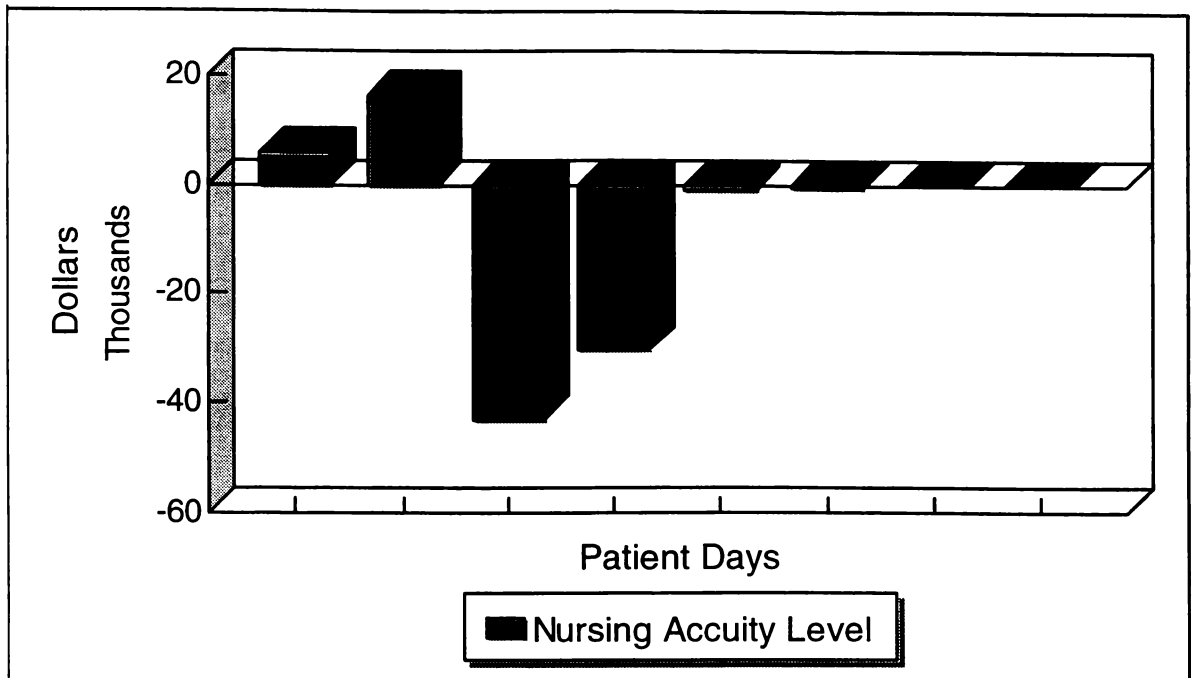
In the second part of the report are displayed the input, or resource use variances. Such variances as labour efficiency and price and supplies are labelled as 'utilisation', while finally the variances against fixed cost items are reported. The system is quite sophisticated, in the sense that resource items are aggregated and dis-aggregated in different ways to produce meaningful numbers in different parts of the report, while the facility is also available to distinguish fixed from variable costs. The format of the report, and the style used to indicate positive and negative variances is quite at odds with most conventional variance reporting (Horngren et al, 1994).

The format is questionable since by showing the reconciliation of the fixed and flexed budget first, it may tend to attract undue attention to aspects of the performance of the unit which are

largely beyond the control of the unit manager. Traditionally it would be concluded under normal circumstances that the unit manager has little or no control over throughput levels at the cost centre level. There appears no reason to assume that this would be any different in the clinical situation of a surgical ward. These initial variances are primarily of a planning nature and likely to be subject to influences largely beyond the control of individual unit managers. Clearly there is a need to reconcile changes between the fixed and flexed budget numbers but from a performance and control perspective the emphasis ought to be on the differences between the flexed budget and actuals. In fact the doubts I expressed earlier affect this conclusion, given the nature of the output measures which give rise to the mix variance and indirectly the volume variance. In consequence I am not happy to conclude that these variances are in fact beyond the control of the unit manager. This could in the future give rise to some unfortunate incentives to game with the numbers in manipulating the recording of nursing acuity. Leaving this aside the remaining variances are relatively typical.

It is perhaps worthy of note that only the nursing inputs are split between efficiency and price, ie. supplies and other variable are only shown as total variances. In addition it might be considered desirable to break the nursing efficiency variance down further to indicate the effects of differences in input mix, ie. the use of different grades of nurse or perhaps the use of agency nurses. In any event the system certainly has the flexibility to expand its analysis as desired. Decisions in this area will need to be reconsidered as more familiarity is gained with the reporting system by unit and divisional managers and accounting and administrative staff.

Appendix 5 shows an illustrative analysis of the DCM report for Ward 7, Burns and Plastics. The objective here is to go behind the face of the report to give a little more impression to the reader of the mechanics which lie behind the variance analysis which is reported in very summary terms within the DCM report itself. Presently DCM only reports differences in volume in %age terms which makes it rather difficult to see the significance or otherwise of mix variances particularly. This illustration clearly shows the significance of the nursing acuity measures over the other output measures and is a fairly typical representation of the output volume across different types of ward. The Burns report indicates a particular problem in producing reliable forecasts of nursing acuity. Very significant mix variances have been produced by a tendency to overestimate high use of relatively acute nursing care in comparison to actual outcomes (see figure 9.3). The resulting variance is adverse and nearly \$58,000 (this is in comparison to a nursing budget of \$160,000).

Figure 9.3: Nursing Acuity Mix Variance for Burns and Plastics

Though I have sought to describe the DCM report only within the Surgery setting, these reports are produced using essentially the same format across the other divisions at the hospital. Indeed the DCM reports have probably been used longer within Clinical Support Services than elsewhere and indeed this is where I first saw managers in the laboratories referring to them. In the Clinical Services areas the reports look very different because of the nature of the activity in these areas.

Within Biochemistry there are hundreds of different identifiable types of test carried out. In Pathology nearly 50 individual products are recognised for reporting and budgeting purposes. Even in pathology then the interpretation of mix and volume variances becomes a complex exercise. Perhaps a consequence of this is to encourage managers to concentrate on the more controllable areas such as utilisation of supplies and labour. Nevertheless this again illustrates the level of complexity in the medical care sector and may indicate the degree of difficulty in providing robust and reliable management information. At this point it may also be sensible to point out that in most situations information outside of casemix, and certainly outside of the DCM reports, is available which may prove at least as valuable an aid to ward or laboratory management. DCM is nonetheless important because of its position of integration within the Transition software package, which provides legitimacy to its reports and a degree of reliability to the information produced.

On one occasion in an interview with one of the unit managers within Surgery the individual gave a particularly interesting response to the 'new accounting' in the hospital. She expressed some considered enthusiasm over her management role and appeared to take a real interest in the administration and efficiency of her unit. This required considerable effort and an ability to work in concert with the clinicians within the unit. She had concerns to ensure that she became aware of the managerial roles required and reports that she ought to pay attention to.

I've asked them [the casemix team] to spend some time in my unit. I have no idea about accounting and am only just getting into a management role. What I want is for them to tell me what they want, and what the numbers mean. Which of the numbers should I be concerned about? (Interview with Nurse Manager, Ophthalmology, 1st June, 1995)

The degree of change in clinical and administrative aspects of the unit and the hospital were very considerable, but she clearly felt her unit to have been especially successful and flexible in its approach. Despite this she noted a significant concern over her ability not only to marry clinical and administrative concerns but achieve a satisfactory "accounting" for the performance of her unit. This worry had been reinforced it seemed by a recent meeting with the clinical budgeting implementation team who were seeking to identify a small number of departments/units to take part in a trial exercise involving revenue reporting and the creation of profit centres. She was concerned that the accounting could show the unit in a poor light despite its efficiency which she did not doubt. Consequently she would need to ensure that she did nothing which might affect "the accounting for the unit" and perhaps put the unit in a poor light (Interview, 1st June, 1995). Accounting becomes a very real object in these circumstances, reified and taken very seriously.

Though the DCM reporting module is only a minor element of the Transition casemix system it is illustrative of the way in which the technology enters the workings of the organisation. Elements of the technology offer at least the potential to provide allies to the overall system and the objectives of the implementation team. Management structures are changed and the imperative for management information is established. At least some of the people who take up these managerial positions are likely to find useful information sources within elements of the casemix system. These people then become the converts who will help promote the value of the system to others by their own commitment.

9.5 The Finance Division: Acting at a Distance

At this point those who were the weakest because they remained at the centre and saw nothing start becoming the strongest, familiar with *more* places not only than any native but than any travelling captain as well; a 'Copernican revolution' has taken place. This expression was coined by the philosopher Kant to describe what happens when an ancient discipline, uncertain and shaky until then, becomes cumulative and 'enters the sure path of a science'. Instead of the mind of the scientists revolving around the things, Kant explains, the things are made to revolve around the mind, hence a revolution as radical as the one Copernicus is said to have triggered. (Latour, 1987a, p.224)

In Latour's terminology the casemix system is the machine or technology which increasingly becomes a black box. As more and more people are enrolled, the system becomes more and more accepted and each individual knows relatively less and less of the whole. People accept information from the casemix system increasingly without question and indeed seek out the system to provide information to justify one decision or another. The Finance Division takes on the role of a centre of calculation. Though projects and activities are increasingly decentralised, data is cumulated and processed at the centre.

... the question is rather simple: how to act at a distance on unfamiliar events, places and people? Answer: by *somehow* bringing home these events, places and people. How can this be achieved. since they are distant? By inventing means that (a) render them *mobile* so that they can be brought back (b) keep them *stable* so that they can be moved back and forth without additional distortion, corruption or decay, and (c) are *combinable* so that whatever stuff they are made of, they can be cumulated, aggregated, or shuffled like a pack of cards. If those conditions are met, then a small provincial town, or an obscure laboratory, or a puny little company in a garage, that were at first as weak as any other place will become centres dominating at a distance many other places. (Latour, 1987a, p.223)

From mid 1994 onwards the casemix project was increasingly moved into the divisions. This was done by physically moving casemix staff out to the division offices. The people who had worked on the project at the centre, some with several years experience of the Transition software, were appointed as casemix managers or analysts in various divisions. A feature of this tactic is that believers were sent out to continue the enrolment process with increasing vigour. They were now among their potential converts rather than at the centre. In this manner casemix information could be extended and collected and others enrolled. The actions of these people and the operation of the system was still fragile and clinicians and other health professionals were approached with due caution as a consequence. Latour uses a geographical example to illustrate this aspect of the translation process, in which people are enrolled and indeed engaged:

... one should discipline the captains so that, whatever happens to them, they take their bearings describe the shoals, and send them back. Even this is not enough, though, because the centre that gathers all these notebooks, written differently according to different times and places of entry, will

produce on the drafted maps a chaos of conflicting shapes that even experienced captains and pilots will hardly be able to interpret. In consequence, many more elements have to be put on board the ships so that they can calibrate and discipline the extraction of latitudes and longitudes (marine clocks, quadrants, sextants, experts, reprinted log books, earlier maps). The travelling ships become costly instruments but what they bring or send back can be transcribed on the chart almost immediately. (Latour, 1987a, p.224)

Accountants serve the purpose of the captains, and through casemix provide the means to inscribe data on the clinical processes. The tools of the inscription process are composed of the accounting and other information systems which "feed" information in precise form into the Transition casemix system.

9.6 Concluding Comments

This chapter has described in some detail the characteristics of the clinical budgeting system. The integration of DRG coding data and product and service cost information has been described. The use and implications of Relative Value Unit (RVUs) formulas has been described as part of an attempt to develop a greater appreciation of the complexity of the casemix system. Illustrations of the management reporting process have also been considered, which allowed us to identify the equivalence between RVUs and standard costs.

The management reports considered also indicated the manner in which the technology and the human actors begin to combine traditional accounting measures with other aspects to create a stronger network. The use of variance analysis in the casemix system is illustrative of the bringing in of established technology, of existing black boxes in order to add strength and legitimacy to management reporting using casemix. We will see in the next chapter how human actors have sought to extend the casemix technology by linking the creation of product cost information with traditional costing techniques.

Notes

1. Robson (1992) describes the three main features of accounting as "inscription":

1/ Neutrality - that the roles of accounting numbers are improperly understood as neutral "representation".

A lack of "correspondence" between the forms of explanation "here" and the objects to which they refer "out there" is only a problem for those who wish to act at a distance (Latour, 1987a, pp. 219 *et seq.*).

Where the actor is less remote from the situation or context he or she wishes to influence, then decontextualised representation assumes less significance. Knowledge and representation (or reference) are in these terms problematized by distance.

Latour (1988a) suggests that "strong" or deductive explanations offer the greatest potential for acting upon a remote setting. Or indeed acting on more than one setting at once. Strong explanations can provide powerful motivators in situations where acting at a distance is desired. The statement that one cannot run a business without "knowing the cost of products or services" is difficult to dispute. The charge that the organisation is "inefficient" becomes impossible to refute.

To achieve such strong explanations it is necessary to move or 'translate' elements from each setting so as to construct powerful explanations via 'inscription'. 'With the problem of distance there is therefore, the issue of the media through which it is possible to influence contexts or situations remote from the actor' (Robson, 1992, p.701). By contrasting this problem with the more conventional models of explanation (descriptive, correlative and deductive) Latour (1988) argues that 'strong' deductive explanations are produced through the processes of inscription and translation.

2/ Attributes - A consequence of the arguments above is that the robustness of the inscription or translation becomes significant. *Mobility*, *stability* and *combinability* provide three related conditions for the effectiveness of "strong" or powerful explanations. The development of accounting and the popularity of numeric techniques are Robson argues a direct result of the centrality, of these qualities to action at a distance. These features are essential to providing measures which will evoke a high degree of acceptance from the actors involved. The measures must be transmittable over distance, be essentially context free and easily understandable by the recipient.

3/ Generalisability - Here Robson refers to Latour's argument that the technique must be regarded as in some general way, better than other competing information sources. Accounting techniques provide a strong mixture of mobile, stable and combinable qualities. Accounting numbers command widespread recognition in company reporting and economic analysis. The "metaphor" of the number greatly enhances the combinability of accounting inscriptions (Morgan, 1988, 1986). As a consequence accounting provides a form of knowledge that may have a greater potential for "power" or action at a distance than other competing technologies. Adapted from Robson (1992).

Chapter 10: More Black Boxes: The Costing of Blood Products

10.1 Introduction

This chapter provides further detailed description of events at the research site. In this final case of the implementation of accounting technique at the hospital we will examine in some detail the application of a traditional accounting cost allocation technique to a specialised service area. The chapter describes the application of traditional management accounting techniques to the calculation of blood product costs.

The provision of product costs, like those of blood products, constitutes one element of the support or "feeder" information which is required in order that the casemix system can provide actual cost information on the "total" cost of an episode of care (refer to Figure 7.1). Similar costing exercises were carried out in other areas of the Clinical Support Services Division, as cost data were established for such services as radiology and laboratory tests.

The development of product and service costs in a variety of secondary clinical support areas was a feature of the activities of the clinical budgeting team at the hospital over the period covered by the site visits. Cost information was necessary in order that casemix costs for the treatment of patients could be made complete. Casemix people were engaged for several months on the task of collecting knowledge of the activities of areas such as the Regional Blood Centre, Radiology and the Bio-Chemistry Laboratory. The product and service costs developed from these accounting systems would then provide some of the data which would eventually be fed into the Transition casemix system. Initially these departmental cost accounting systems would contribute to budgetary planning and control within each of the units. The reporting of this information to management would be accomplished through the Transition system. At a later stage this data would be further translated in order that comparisons could be made to standard DRG cost data. This further processing of the data would require the transfer of data between different packages within the Transition system and was only to take place once the integrity of the data had been established.

The blood products model is illustrative of similar exercises carried out over the period in a

number of areas of clinical support services (see chapter 7, section 7.4). Following Latour (1987a) the establishment of these "feeder" systems which were designed primarily to provide cost data to enable the casemix clinical budgeting system to operate fully may be seen as examples of black boxes being established as part of the process of strengthening the casemix system by nonhuman allies. These nonhuman allies are constituted by the accounting systems which provide convincing data ("inscriptions") which enable the enrolment of human allies.

Over the following three sections the structure of the blood collection and costing processes for blood products will be described. The next section will situate the resulting product cost numbers within the organisation and the casemix system. In the following section the blood products costing model will be discussed within a framework based on the sociology of translation framework. The discussion section attempts to consider the place of cost information within the process of health reform. This is followed by a short conclusion.

10.2 Outline of the Blood Products Process

The development of accounting information in these service areas can be regarded as of a tentative and experiential nature. It is in the development of this product cost information that there was least guidance from both the Transition casemix software and from the experience of other health providers in New Zealand. Human actors, in the form of the casemix analysts sought to extend the casemix technology by linking the creation of product cost information with traditional costing techniques. In comparison to the implementation of medical coding there was more room for innovation in the identification and adoption of appropriate techniques. The casemix accountant who was primarily responsible for the constructing of product cost information in the Clinical Support Services Division (CSSD) spent several weeks within each unit as a precursor to each implementation. The following provides a summary of the principal features of blood processing. It is felt necessary to provide this level of detail in order to indicate the structure of the underlying processes which the blood costing model sought to represent. This will enable the explication of the introduction of a conventional accounting technology later.

The blood collection process is carried out over a five day week. Fresh collections are processed as soon as possible following collection in order to preserve quality of the blood

constituents. Some products have very short life, as little as five days, so processing to separate one element from another is crucial. Initial processing produces the commonly identified blood constituents: red cells, plasma and platelets. Plasma is further processed to provide a variety of products, a number of which are regarded as of high value in an open market situation. The further processing, or fractionation, is a costly and specialised process. New Zealand does not have a blood fractionator and plasma collected in NZ is sent to Australia for fractionation. Blood Donors may also be classified into two broad categories, those whose blood exhibits.

- 1/ Standard characteristics.
- 2/ Special features.

Examples of the second category are people whose blood has a high resistance to certain medical conditions, such as Hepatitis or Tetanus. Features such as these are relatively rare and in this sense of at least scarcity value. Some repeat donors will have been identified as possessing such features, and their blood will be processed accordingly. In other cases the features may be identified as a result of an extensive testing process at the Blood Centre. The manager of the Waikato Blood Centre regards the identification of such attributes as an important part of the "production" processes. All collected blood must undergo a range of test to establish its quality, to ensure contamination is not present or infections such as HIV.

Valuable features of collected blood may only be isolated if a range of secondary testing is carried out. We believe this is an efficient use of resources, which will pay dividends in the operation and cost effectiveness of the Blood Centre. (Interview, 2nd November, 1994)

Blood collection takes place both within the Centre itself and at other sites. Some collection are still made by mobile facilities. The "raw material" collected is most commonly in the form of whole blood but modern techniques and technology have allowed specific elements of living blood to be removed from donors' blood while other elements are returned to the body. In this manner it is possible to collect plasma only, from a given donor, which serves to maximise certain beneficial characteristics from a medical perspective. It may also contribute to the efficiency of the Centre since it enables an optimisation of the collection process. The collection of whole blood produces three basic products, two of these may be processed further to obtain final products. This is not the case with red cells which are increasingly regarded within the blood transfusion service as in a situation of surplus supply over demand. Where plasma is removed independently of red cells this enables a more rational use of resources. In practice these procedures enable a much greater volume of plasma to be obtained

from a single donor. The processing of whole blood and the subsequent waste of red cells may therefore be minimised.

The various blood donor characteristics and the flexibility of the collection process results in a production process with a number of significant control variables. The controllability of these variables presents a major problem to efficient resource management. Some of the variables are under the control of the staff of the centre, while others are uncontrollable. The manager of the Centre and his staff are able to manipulate a number of these variables in order to effect the overall outcome and indeed the outcome of individual processes. Other variables affecting the mix of input and volume are less controllable. The volume of blood collected is affected by the willingness of donors to present to give blood for example. The possession of special features in the blood is related to individual donors.

It is clearly accepted by staff that there is some variability in the processing and production of blood products. In order to provide a model for costing purposes some simplifications must be made. As a result it is accepted that the costing model does not reflect the degree of complexity of the actual blood collection and processing process. It is important to bear in mind that a simplified model of the process is being used when making decisions in relation to the cost information produced. It is also important to appreciate the fact that most of the cost involved in the collection, testing and processing is of a joint or inseparable nature. As a consequence of this last feature the value of the information produced for decision making is questionable. The management accounting literature has recognised this as a problem in process industries producing through joint processes, or common raw materials, for some time.

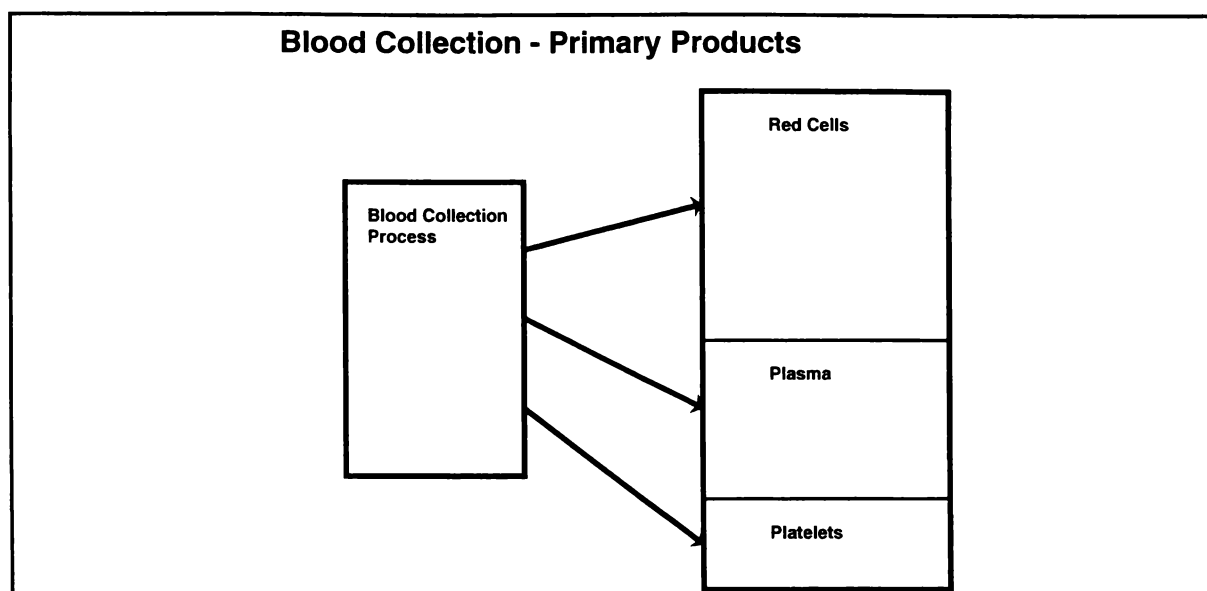
It was considered by the majority of oil refineries that the complex nature of the process involved, and the vast number of joint product outputs, made it impossible to establish any meaningful cost apportionment between products. (Slater and Wooton, 1984)

Regardless of this recognition of the technical limitations of such accounting manipulation, it is important to realise that once such data are inscribed within the accounting and casemix systems, they become reified. Subsequent decisions are unlikely to disentangle the effects of joint cost allocations from other accounting numbers within the casemix system. The blood costing system is accepted as a black box, and its inscriptions flow into and affect other accounting numbers within the casemix system.

10.2.1 The Blood Products Model

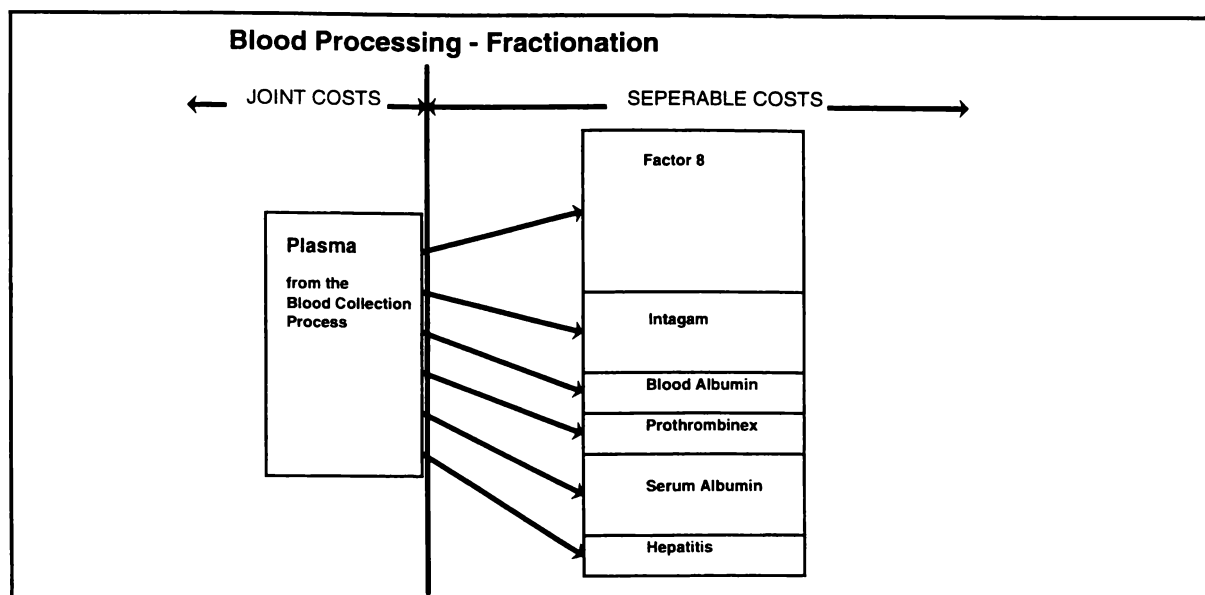
A simplified model of the blood collection, testing and processing procedures is depicted in Figures 10.1 and 10.2. The typical process begins with the collection of whole blood. After testing and initial processing three identifiable products are recognisable. This part of the process is indicated in Figure 10.1.

Figure 10.1: Blood Collection Process: Red Cells, Plasma and Platelets



The diagram illustrates the traditional options when processing whole blood to break out the major components: red cells; platelets and plasma. The variations in collection processes which were referred to earlier, including the use of specialised equipment to extract specific elements of donors blood, do not provide a major problem to the modelling of the costing process. But the model was developed without taking these additional factors into account.

Figure 10.2 is used to summarise the further processing of blood products. This consists primarily of the processing, or refining, of plasma by CSL in Australia. All New Zealand blood fractionation is carried out by CSL under contract to the Health Ministry. The process produces a number of very valuable blood products which are essential to the operation of the New Zealand health sector. CSL invoice for the processing of New Zealand plasma on a detailed basis, identifying their own allocation of costs to individual final products. As a consequence the costing model only needs to apply the joint cost of plasma in some appropriate manner across these individual blood products.

Figure 10.2: Products Produced from the Fractionation Process

The processing of blood products by CSL is done on a separate basis for NZ and Australian blood products, and for the purpose of processing all New Zealand plasma is combined. Detailed records of the volume, nature and characteristics of plasma is kept at each of the New Zealand blood collection centres. This pooling process during the specialised refining of blood products was a feature of a recent scare involving the donation of blood by an individual who had recently died of Creutzfeld-Jacob disease (NZ Herald, 10th May, 1996). There was considerable publicity when this incident was announced. The structure of the blood products process became apparent very quickly, as the medical authorities announced measures to quarantine any affected products. These measures quickly affected all areas of the country, since any blood which has entered the stage of being processed as plasma by CSL is processed as a batch, collected from anywhere in New Zealand.

As part of the health reforms the government have set up a national organisation to coordinate the collection and particularly the availability of blood products. The Blood Transfusion Trust was charged with the task of design and implementation of a system which would enable health service providers to be charged for the blood products they used. This was considered necessary since there exist regional imbalances between the demand for and supply of blood. Previously no charges were made to hospitals and other users for the costs of collection and initial processing of these items. Blood products were made available on an "as required" basis, users being charged only for the CSL invoiced cost of fractionated product.

Though it is not intended to alter the availability of blood products, the Ministry of Health felt it necessary to develop a system of full cost recharging in order to reflect the total cost of health service provision in each Crown Health Enterprise. A system is being implemented based on a simplified model of the blood products process. Again in relation to the national scheme to develop blood products costs, we can see evidence of the operation of networks of relationships being extended from the local, within each major health provider, to the national level, involving the Blood Transfusion Trust, the Ministry of Health and the consulting arm of a large chartered accounting firm. Two consultants were involved at different stages of the development of the national charging system, and visits were made and information gathered from regional blood collection centres in order to identify a favoured accounting technology.

It is presently intended to recognise the difference in value of the principal types of product. The system is based on a recognition of the critical nature of some of the products rather than others. The system will operate by collecting data on the volume and characteristics of blood contributed to the national pool, and health providers holding credit and debit balances will be identified on a regional basis. The Blood Transfusion Trust expect the system to provide an incentive to health providers to match supply and demand within their region and encourage some of the high cost suppliers to seek efficiencies in their collection and processing operations. Currently the reported collection and processing costs reported from different regions differ by several hundred percent. It is as likely that these reported differences in accounting numbers are the result of differences in accounting practices as they are to "real" differences in efficiency. These measures will provide comparable information across the different organisations involved in the New Zealand blood collection and processing.

The blood costing and national recharging system can be seen as, in microcosm, an identical exercise to that being carried out through the development of casemix systems at health providers and the use of DRG coding in order to make each clinical episode of treatment visible to those in the Ministry of Health in Wellington. Blood costing like DRG coding enables "action at a distance". Administrators at the centre can view through the technology the cost of a blood transfusion, or a programme of immunisation, in Hamilton or in Whangarei. As more and more areas of service can be inscribed in dollar terms, decisions at the centre become more and more confident. Those at the centre are able to see much more clearly than those in the individual laboratories and wards where the inscriptions indicate patients are best treated, at least in terms of "lowest cost". At the same time regional blood

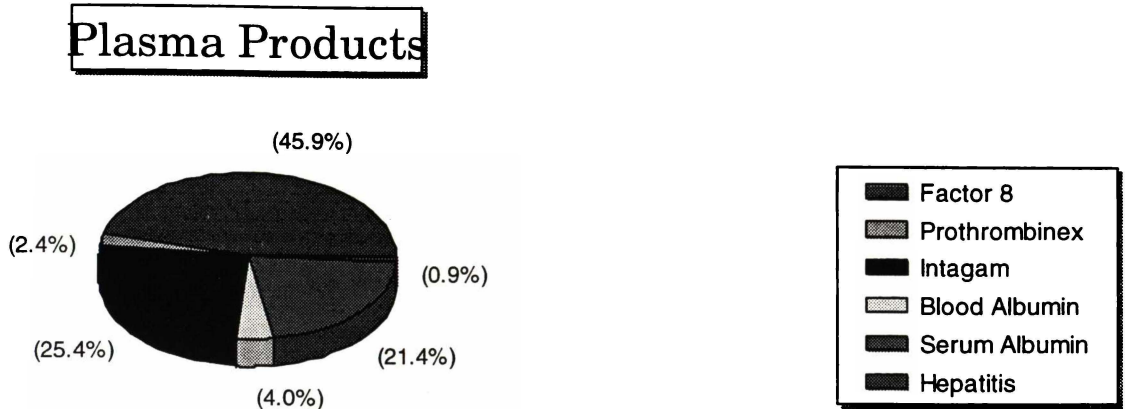
centres are placed under the gaze of the Health Ministry and under pressure to perform as well as other organisations in the system.

10.2.2 Inscriptions of the Blood Products Process

It was to be by applying traditional accounting techniques that the casemix people sought to provide "rational" inscriptions, representations of the blood products. The result of bringing in an existing accounting technology is in Latour's terms the introduction of a quasi-object in order to strengthen the network, to provide a technology which might assist in enrolling and in particular mobilising other human actors. In this instance it is a member of the casemix team who by bringing in some specialised accounting knowledge seeks to convince the other organisation members of the "fit" of the accounting numbers to their "problems".

The use of a "legitimated" accounting technique provides the necessary authenticity to convince people within the Blood Centre of the authenticity of the resultant costs. The manager of the blood centre though initially unhappy about the application of cost values to the work of the collection centre, saw some advantages in being able to signal to clinicians that blood products should be seen as "valuable". At the same time this adoption of accounting produces a mobilising device to ensure that the accountants and casemix team are able to limit the manoeuvre of the administrators in the Blood Centre and the clinicians within the Surgery Division. In relation to the blood centre it was clearly demonstrated within a few months of the implementation of the new accountings that the manager was to be held accountable much more clearly for performance against a flexible budget. The costing of blood products made the "performance" of the centre more visible by removing a previously unmeasurable element of resource use within the department. The costs established are thus reified and became a part of the accepted facts of the organisation. The complexity of the model developed was sufficient to deter most of the detractors of the costing procedure.

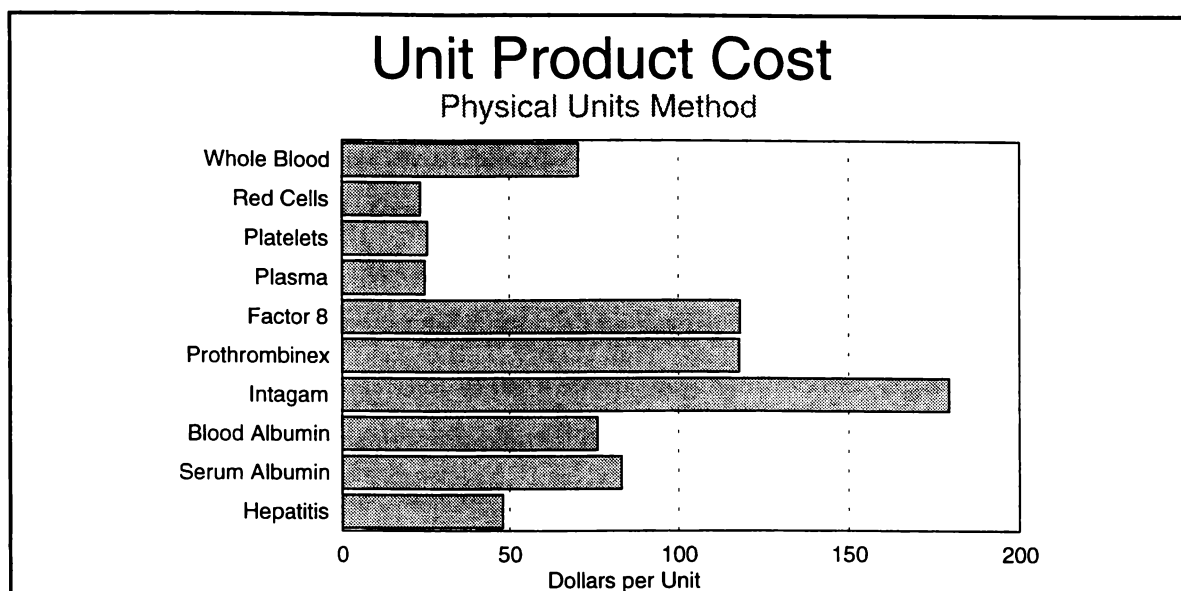
The costing procedures follow closely the physical process described above and apply a physical units approach to establishing product costs. Figure 10.3 indicates the standard mix of product from a given volume of plasma.

Figure 10.3 Plasma Product Mix

The Cost model consists of three elements:

- 1/ Collection and initial processing costs.
- 2/ Testing.
- 3/ CSL processed product prices.

The apportionment of collection costs and testing costs are both done on the same basis, and are calculated by using a combination of physical volume measures and an arbitrary split of costs over the four "main" products: whole blood; red cells; platelets and plasma. This split was agreed on following discussions between the manager of the Blood Centre and the divisional accountant to reflect the resources expended in processing the primary products to this stage. The resulting unit costs reflect an approximately equivalent cost per unit of product, without taking any account of differences in volume. Product units tend to reflect the liquid volumes of these blood products which have been established through past clinical practice. Red Cells account for around three times the volume of Platelets but according to the model are allocated approximately the same unit cost. The results of the costing model are indicated in Figure 10.4. It should be noted that the resulting product costs although arbitrary are based on agreed and consistently applied principles, and on the objective of recovering the total cost of the Waikato Blood Centre.

Figure 10.4: Unit Product Cost

Individual final products are now very different in value, cost and volume. A unit of plasma would be measured as 250 mls, while platelets would be a unit of 65 mls. Some of the lower volume, more exotic blood products, such as Blood Anti D and Blood Tetanus would be measured as units of 1ml. The unit costs which result have been compared with cost figures obtained from another large blood centre located on the South Island of New Zealand, and were found to be comparable on 90 percent of products to within 10 or 15 percent.

10.2.3 The Significance of Blood Product Costs

Though the objectives of government policy in the form of the health reforms are open to debate, the public message is to increase efficiency in the provision of health services. The costing of blood products is a relatively minor illustration of the construction of financial and other information which has become necessary in order to implement aspects of the health reforms. The need for increased information is a feature of the introduction of a "quasi-market", into the public health sector. In this case we are able to illustrate an aspect of the development of accounting data and systems necessary to accomplish the meaningful "arms length" negotiation and contracting process envisaged by the government reforms and embodied in the new RHAs terms of reference. The value of this newly acquired information is seen as critical by Midland RHA as it forms the basis for the contracting process and

facilitates the monitoring of efficiency within the CHEs by the use of DRG coding of patient treatment episodes.

It is important to recognise that the processes described above place much emphasis on the collection of information and the monitoring of health service provision at a significant level of aggregation, using largely financial data. The systems which are being implemented are first and foremost a reaction by the CHEs to provide information directly to the respective RHAs, or to provide the management of the CHE with the information they feel is necessary to enable them to manage their organisation in the new environment, and in particular to provide the financial data necessary to enter commercial type contract negotiations with some degree of confidence. It is possible that these objectives, of providing information to an external body, namely the RHA, and facilitating relations with them could be achieved with a minimum of impact on the hospital itself.

Research has indicated that some organisations appear to use accounting and other information systems in order to present an image of rationality to external institutions (Meyer and Rowan, 1977; Ansari and Euske, 1987). Others (Chua, 1995) have suggested that this role of accounting information systems may not be achieved without having a significant effect on the internal operations and culture of the organisation. The tendency for accounting systems to affect operational aspects within organisations is more in keeping with the interpretation of this author.

At Waikato decisions have been made to encourage as much use of the new systems internally as possible. There are a number of aims of this approach, though perhaps fundamental is that concerning the environment within the hospital. Senior Management has committed to achieving a change in attitudes as was noted in the TCB Implementation Plan (1994). There is a belief that to secure the future of the organisation, a change in culture is necessary. The Director of Finance and the TCB Project Manager, both regard such a change in culture within the hospital as vital in order to respond appropriately to the government health reforms. A move toward a more commercial attitude and greater commercial awareness is anticipated by the purchaser provider split and other reforms designed to increase competition in the provision of health services. People react in unpredictable ways and clearly many changes and considerable uncertainty have characterised the health sector for some years now. Uncertainty over the future of individuals, individual units or indeed institutions are elements contributing

to high levels of uncertainty within the health sector. It is important to recognise this in providing the context in which to consider the following comments.

Some change of attitude is being engendered. Whether the broader political and social uncertainties are hindering or facilitating this process is uncertain. People within the health sector have long established cultures. It is notable that this is a sector where recognisable differences exist in the culture of the professional groups. The desire to achieve a change of culture in the health sector requires that groups of clinicians, nurses and managers all accept some change. In changing management style much reorganisation within the sector has already taken place. At Waikato the organisation has been restructured into a divisional form and divisional management teams established. Many of these involve new posts and people from the private sector have often been recruited, especially into the top management position.

Culture change is not easily accomplished, but it is change of this kind that lies at the centre of the enrolment process. The TCB project involves the mixing of people and technology in ways which, if they are to have an effect, must have an impact on work practices and social structures within the hospital. As the TCB project spreads its influence throughout the hospital, it is likely that new groups will be established, to manage with and process the new interests will come into being, in reaction to the new accountings and other inscriptions of the clinical processes. As with blood products, new ways of seeing will be engendered by the new inscriptions. Treatment volumes, nursing acuities, length of stay, product and service costs will increasingly be evident in the interactions between groups within the hospital.

When set in this context the implementation of operational management systems and financial control systems must be seen as only a component of the change process. Though if change is to occur it requires people all the way through the organisation to react differently. Within the hospital the advent of systems designed to charge out elements of service, such as laboratory tests and blood products has further implications. These are the financial systems which most managers of service departments, clinicians and nursing managers will come into contact with. A brief indication of the nature of these changes and their possible effects on people within the hospital may be useful.

These aims of management, these intentions at health reform have moved beyond tentative possibilities. Networks have been constructed, in some instances at considerable cost, in other

cases cost has been a lessor factor. Culture changes have been assisted by many of these incremental changes. The network that has casemix at its centre has been tested and extended throughout many areas of the hospital. People have been enrolled into the system and into a culture of concern for cost and efficiency, and of an interest in managerialism when there was no such interest before. Within the hospital at the unit level some key people have become enrolled into the casemix system. In the case of the blood centre manager there was a noticeable change of attitude. This manager had made little or no use of accounting information previously and certainly had not been in a position to be concerned about the prices charged for the products produced from the centre. There was now a concern for efficiency, in terms of cost, which was not apparent previously. There was also an interest in the costs being reported by other blood centres within New Zealand, indicating some potential concerns about relative "efficiencies" vis-a-vis other producers. In other cases the enrolment process was not so persuasive. The manager of the Radiology Department was replaced by a more "profit" oriented private sector type in mid-1994 (Interview with Laboratory and Radiology Lab. Manager, 27th July, 1994).

The manager of the Blood Centre as mentioned earlier has a complex task to perform in the operation of a unit which is clearly subject to considerable uncertainty in supply, and which is often the recipient of emergency demands without notice. The manager is confident in the performance of his unit but does feel that a recharge system will provide some benefit in the efficient use of blood products.

(clinicians).. tend to use blood products where cheaper substitutes are available. Whole blood may be used in preference to a saline drip, since blood is considered to be free. (Interview, 2nd November, 1994)

The biochemistry laboratory manager clearly felt the costing of laboratory tests of considerable value, and had played a crucial role in establishing the variables necessary to the costing exercise. It would appear that there is no threat perceived to the position of these managers directly from the advent of a more financially oriented, profit motivated environment.

The outlook is much better, the situation can only improve. At present other areas have an 'open cheque book' on the (clinical) service departments. **Once charging comes in there will be much greater incentive for clinicians to use more 'rational' testing regimens and to seek advice from the labs...** (Interview, 27th July, 1994)

This manager also has a strong commitment to the concept of the recharging system and an

expectation that relations between the laboratories and clinicians are likely to improve.

The change to a recharge system should result in clearer lines of responsibility and greater visibility.
(Ibid)

The development of cost models in areas such as blood products and laboratory testing may be seen as described earlier as a necessary extension of the inscription of information vital to the implementation of casemix and clinical budgeting. At the same time there are of course other possibilities, uses and interpretations of these developments. One of the most common perceptions within the hospital was the use of this cost information as a step toward the privatisation of services, of contracting out. At the present time there has as yet been no significant change on this at Health Waikato in the Clinical Services area, though it is still a live issue. Other areas, less directly related to the treatment of patients, such as laundry and cafeteria services have been contracted to outside organisations. This contracting out has not always been uneventful. The laundry contractor recently being made bankrupt.

10.3 Accounting in Action: A Quasi-Object

Following Latour it becomes essential to examine the detail of accounting systems generally and their implementation in particular (see Preston et al, 1992). Other issues must also be considered such as 'action at a distance', translation and particularly the significance of inscription within the process of accounting system implementation and acceptance. Latour places great significance on the influence which technology and particularly 'black boxes' have on the trajectory and strength of systems or 'networks'. Though Latour places very considerable emphasis himself on the need to study 'science' before it becomes 'settled', ie. while 'controversy' still rages, this is not quite so true of his attitude to settled science and particularly 'black boxes'. In this respect a knowledge of the process during which a black box came into being, though of value, is perhaps of lesser importance than the role these black boxes are 'made to play' in later controversies (Latour, 1987a).

Though Latour (1987a) does provide some, at least, superficial correspondence to a structured process which might provide us with a list of steps (see discussion of Latour's Rules of Method in Chapter 4) which we might use to 'follow scientists around', he also stresses the difference and fluidity of individual situations and sequences of events and their significance.

As part of the processes which Latour describes especial emphasis is given to aspects of the inscription process, a part of the process which enables the authors of technoscience to present convincing arguments to others.

In accounting as in other soft sciences it is perhaps more common to find the existence of techniques and practices which might be regarded as only pseudo black boxes. Accounting rules and procedures which are widely accepted are only the result of compromise and negotiation (Robson, 1992, 1994). Accounting standards generally fall into this category, being often achieved as a compromise among interested parties and often subject to periodic review. Accounting software packages necessarily must incorporate these accounting conventions and rules to provide useful and acceptable accountings.

As part of this process the blood costing project and other similar service and product costing exercises have spread the use of cost information where it had never existed before. New inscriptions have been prepared which enable clinicians to be held responsible in new ways for not only patient treatments but also costs of treatment. It is in this way that Latour describes the success of the laboratories, the "centres of calculation".

Accounting provides the tools by which it becomes possible to translate and to combine disparate elements.

Everything that might enhance either the mobility, or the stability, or the combinability of the elements will be welcomed and selected if it accelerates the accumulation cycle: a new printing press that increases the mobility and the reliable copying of texts: a new way to engrave by aquaforte more accurate plates inside scientific texts: a new projection system that allows maps to be drawn with less deformation of shape: a new chemical taxonomy that permits Lavoisier to write down the combinations of more elements, but also new bottles to chloroform animal specimens, new dyes to colour microbes in cultures, new classification schemes in libraries to find documents faster, new computers to enhance the weak signals of the telescopes, sharper styluses to record more parameters on the same electrocardiograms. (Latour, 1987a, p.228)

Accounting operates in just this way, by making it appear quite appropriate to represent such different objects as red cells and nursing acuity in dollar terms. The inscription of blood products as dollar values is but one step of many by which the costs are compiled and brought back to the centres, within the Finance Division at the hospital, or the controller's office at the Ministry of Health in Wellington. It is this power to translate into financial or other terms which makes it possible to accumulate knowledge and to "act at a distance".

The role of accounting in the establishment of casemix can be illustrated by this example of

blood products costing, where we can see the accounting coming in as a piece of technology, as a "black box". This is the result of the acceptance of the accounting model, often by only a few people. Once this has occurred then there are few serious detractors left. Once the casemix people have enrolled a handful of key people in the Blood Centre and perhaps, but not necessarily the Surgery Division, the model is accepted, reified. In the enrolment of clinicians and other health professionals other devices are deployed in the enrolment process. In the "feeder" areas the main mechanisms involve traditional accounting techniques and reporting systems. In the wards and operating and medical areas the casemix system also involves relatively complex medical coding systems to be implemented and other related data collection and reporting systems.

At Health Waikato the use of Diagnosis Related Group (DRG) coding has been an especially important enrolment device. The work of clinicians and nurses can, given accurate data recording, be translated and inscribed within the casemix system. Here there are other incentives for staff to comply with the systems. The reporting of DRG information has become crucial to receiving payment under funding contracts, while casemix data also promises a source of comparative information on patient treatments and clinical practices.

The process is very quick, the accounting numbers invariably convince, or even where they fail to convince, they do not elicit any strong arguments against. The manager of the blood centre found himself being held accountable for an overspend against budget within 5 to 6 months of the accounting numbers "going live". Although this was resolved, events surrounding the occurrence of the "problem" left the manager in no doubt as to the serious manner in which his unit's performance against these target numbers was viewed.

Very soon the blood numbers are inscriptions within inscriptions, within the casemix system. The blood costing model has been accepted as a black box, people refer to the casemix information without even considering these numbers which constitute a part of the picture which casemix represents.

The difficulty of grasping what goes on inside their walls thus comes from the sediment of what has been going on in other laboratories earlier in time and elsewhere in space. The trials currently being undergone by the new object they give shape to are probably easy to explain to the layperson-and we are all laypeople so far as disciplines other than our own are concerned- but the older objects capitalised in the many instruments are not. The layman is awed by the laboratory set-up, and rightly so. There are not many places under the sun where so many and such hard resources are gathered in so great numbers, sedimented in so many layers, capitalised on such a large scale. When confronted earlier by the

technical literature we could brush it aside; confronted by laboratories we are simply and literally impressed. We are left without power, that is, without resource to contest, to reopen the black boxes, to generate new objects, to dispute the spokesmen's authority.... Laboratories are now powerful enough to define reality. (Latour, 1987a, p.93)

The Finance Department at the hospital is able to represent reality within casemix. Patients, episodes of treatment, clinicians are all inscribed within the casemix system.

In this chapter the role of accounting methods in the allocation of fixed costs in the costing of blood products was explained. Other traditional accounting techniques have also been mobilised in accounting for overhead costs and reaching decisions on the categorisation of expenses as either fixed or variable.

The role that these simple rules of accounting play in the presentation of "facts" within the casemix system should not be underestimated. It is the application of these rules on a repetitive basis which gives accounting its taken for granted nature. Once the data have been assembled and processed within casemix and the systems which precede it, those numbers which are output take on great significance. Though initially some may be sceptical, as other people are enrolled who increasingly treat the output of the systems seriously, changes in attitude follow. Once clinicians see decisions being made with casemix data they also become interested in the system if only to ensure they do not fall foul of it. A concern with costs has tended to spread among nurse managers and clinicians at the hospital, in some cases this is the case in spite of a scepticism in the accuracy of the information being produced. Others react with their concerns over the accuracy of some data or other, and in the process are becoming enrolled in the project themselves.

10.4 Discussion

The value and use of costing products produced in a joint processing situation has certain well recognised limitations (see Horngren et al, 1994; Slater and Wooton, 1984)). These need to be emphasised, particularly in a situation such as this where cost information is only now becoming available. The over reliance of managers on joint product costs in critical decision situations must be guarded against. As a rule consideration of the viability of individual products can only be made in relation to the costs of further processing, and then only where these costs are related to the production of an identifiable product.

Circumstances in the blood products process are such that typically both initial collection, testing and fractionation are all joint process situations. As a result under normal circumstances decisions on the value of individual products is not possible. Increasingly the use of new technology is likely to complicate this simple rule in blood collection. The ability to collect only plasma from donors may already be seen as a contradiction to the above statements. This technology allows "accurate" costs to be placed on the collection costs of one of the major products resulting from traditional blood processing procedures. The situation remains complicated by the necessity to further process, through fractionation the plasma provided from either collection process. In spite of these problems affecting the costing of blood products I have attempted to emphasise the perceived need for a greater use of financial information in the management of the health sector.

The objectives of costing blood products and other clinical support services have been explained above as involving at least two aspects of the health reform process. One being related to the need for complete cost information to support government policy in introducing a competitive environment into the health sector. The other is to consider the expectations and the behavioural changes of those people within the health sector who will be affected by the introduction of "fully" costed blood products.

Although it may seem strange for accountants to accept that resources might be used with little or no knowledge of the cost, this was the nature of the environment in the public health sector, and is only now changing. Not only low cost elements of medical treatment might be used to excess under such circumstances. Providing the 'best' medical treatment when the cost of that treatment is unknown is easily justified, and very little information on the cost of treatments was previously available. Indeed in some ethical sense it might be considered as desirable for decisions to be taken without cost as a consideration. On the other hand it is increasingly recognised that resources (and not just health resources) are finite. It is widely accepted that in such circumstances the cost as well as the effectiveness of the provision of health services and individual treatments becomes an important variable in "rationing" services (Blank, 1994).

If the treatment of one patient is more clearly at the expense of another the argument for considering the quality of life for the many rather than the few becomes a factor. The cost of treating cancer patients versus the costs of banning tobacco sponsorship, surgery versus medical treatment of heart condition or other conditions are all brought into play. These are

larger problems which have been addressed to some extent by special studies. But the problem remains that the lack of information on the cost of health services makes rational decisions on the appropriate allocation of resources difficult if not impossible.

The casemix accountants were engaged here in attempts to inscribe clinical information in new ways. Previously blood products had been free at the point of use. Clinicians had no particular incentive to show concern for the cost or value of such components of the treatment of patients. In order to provide convincing data the casemix people had to enrol accounting technology, which took the form of traditional product costing techniques. The implementation of the costing systems which create these product costs might be characterised using this quote from Latour.

... the same people who constantly generate new objects to win in a controversy are also constantly transforming them into relatively older ones in order to win still faster and irreversibly. As soon as somatostatin has taken shape, a new bioassay is devised in which somatostatin takes the role of a stable, unproblematic substance in a trial set up for tracking down a new problematic substance, GRF. As soon as Svedberg has defined protein, the ultracentrifuge is made a routine tool of the laboratory bench and is employed to define the constituents of proteins. No sooner has polonium emerged from what it did in the list of ordeals above than it is turned into one of the well-know radioactive elements with which one can design an experiment to isolate a new radioactive substance further down in Mendeleev's table. **The list of trials becomes a thing; it is literally reified. This process of reification is visible when going from new objects to older ones... All the new objects ... were framed and defined by stable black boxes which had earlier been new objects before being similarly reified.** (Latour, 1987a, p. 92, emphasis added)

Latour distinguishes between settled science and unsettled science in order to emphasise the different manner in which people respond and characterise established hard facts from active scientific controversy. So it is with the costing systems established at the hospital.

At the time of their development these accountings were controversial. There were several instances of disagreement between the casemix accountants who were charged with developing the systems and the managers of the functional units. In developing costing procedures within the Biochemistry Laboratory an issue had arisen over the level of detail to include within the cost model. The manager of the unit, with a scientific background, required much persuasion that tests of similar resource requirements had to be grouped in order to reduce the resultant cost reporting information. The laboratory carries out hundreds of different tests, some of which are relatively low volume, to make costing and variance reports manageable the casemix accountant combined large numbers of different tests to facilitate the budgeting and reporting process. This seemed quite excessive simplification to the laboratory

manager, and illustrates the potential conflict of interests between financial management and operational managers. Though a more detailed approach would have been perfectly easy for the laboratory manager to use, it would have made reporting to the next level of management more difficult.

Controversies, such as these, were resolved by compromise where appropriate. As a consequence the systems were generally designed in concert with operational personnel, and it would be these people who ultimately would be held accountable for controlling against flexible budgets based on the financial inscriptions produced. The managers of these units and other personnel would also often, at least partially, become enrolled into the casemix project. In some cases existing staff were enrolled in this way, while in other cases managers were replaced by others who were expected to show some sympathy for the adoption of cost data as a representation, an inscription, of clinical data.

10.5 Concluding Comments

This chapter has described in some detail the characteristics of the model which was designed to attach financial values to blood products. The design and implementation of the new information systems has involved a considerable effort and the commitment of staff resources. The development of a costing model for blood products is a small but significant component of the casemix information network. This is one source of cost data for the casemix system itself, and with other data will enable the "accurate" recording of the cost of episodes of care within the hospital.

These accounting system implementations demonstrate the ability of the casemix team to design new objects which served as a device for the enrolment of others into the project, and at the same time provided convincing "facts" on the costs of clinical support services to other groups of people within the hospital. The development of product costs is again an example of the combining of technology and human actors. Traditional accounting measures are brought in by the human actors in order to create a stronger network. New inscriptions are produced as new systems or models are implemented and "facts" begin to become accepted.

Chapter 11

11.1 Introduction

In this thesis I have been weaving a story around the use of accounting systems and inscriptions in the NZ health reforms which aims to present a Latourian view of accounting and information systems as technological “quasi-objects”. Latour uses a very general conception of technology which encompasses anything emerging from what he terms the process of “translation”. In this context Latour uses the term to refer to the production or if one likes the “fabrication”, of “quasi-objects”. This is most easily seen as consisting of the physical objects which “populate our western societies”, but for Latour also includes inscriptions and “facts/artefacts”. Latour refers to the “proliferation of hybrids” a term which has evoked some critical response (see Elam, 1998). I regard accounting and information systems as consisting of mixtures (or perhaps “collectives”) of technological quasi-objects in this very general sense.

Drawing from Latour has helped to provide a frame of reference to allow an assimilation of disparate changes and influences as they have come to affect the health sector at a national level within New Zealand and also at an organisational level within a large regional health provider. Though a great deal of the impetus for change was emanating from outside the hospital, as the government policy on health reforms took effect, these largely legislative and structural changes were only part of the story (see chapters 5 and 6 for discussion). In the language of Latour some individuals and groups were to be central to the process of problematisation and enrolment, others might be regarded as permanent or temporary allies. Of particular significance at HW was the role of technology, in the form of the Transition Casemix System. Transition came to play a central and powerfully constitutive role in the Clinical Budgeting Project at HW.

11.2 Recognising the Non Human Actants

In deciding what elements of the sociology of translation I should adopt in my research within Health Waikato I was very much conscious of the need to remain as close as possible to what

I read as the central tenet of Latour's expounding of the sociology of translation. In consequence I have tried to give prominence in the empirical case chapters of my thesis to a thorough explication of the non human actants. This for me is a central and I hope novel emphasis in the accounting literature.

Though I very much accept that what I am doing is controversial, I can see no other way of remaining faithful to the sociology of translation. Clearly there is a need to keep a balance between what might at times appear a conventional functionalist description of accounting systems and an exposition of informed by the sociology of translation. I saw no better way to do this than to juxtapose description and theoretical interpretation. This is what I endeavoured to do in chapters 7 through 10 particularly. I accept that the approach and theoretic interpretation I am using is rather different to most of the existing social constructionist literature in the accounting and information systems areas. I hope that my intent is clear.

In these chapters I have deliberately presented my interpretation as a story without a great deal of recourse to direct quotes. I believe this is consistent with Latour (see also Bloomfield and Best, 1992). In my interpretations I have attempted to distance my story from a conventional functionalist tale by explicating the effects of and implications of the technology using my understanding of both ANT and the sociology of translation. As a consequence I am trying to emphasise both the technical characteristics and pervasive nature of accounting techniques and such systems as are constituted by the techniques of medical coding.

If science and technology are politics pursued by other means, then the only way to pursue democracy is to get inside science and technology, that is, to penetrate where society and science are simultaneously defined through the same stratagems. (Latour, 1988a, p.39)

This conception of the social and of science provides a powerful way of viewing the processes which determine our culture, the bonds among people and things which articulate and define the very structure of our society. It is this intimacy of people with things that is so central to Latour's analysis of "science in action". But is it not also what we observe at all times? We live increasingly in a society which is constituted of people with machines, not of people separate from machines. In this respect the concept is convincing. Surely Latour (1993) only suggests that we accept that society has indeed changed, and that the resources of which society is composed clearly include the sciences and technology. Culture then is a composite of these elements, the human and the non-human, consequently what constitutes power is conditional on the ability to manoeuvre human and non-human actors in an attempt to strengthen or

weaken existing associations. It is only in this way that the capitalist, the politician, the bureaucrat can mobilise others and hope to convince them of the need to buy a new product, go along with the reduction in health services and accept the loss of services to rural areas. "Social" and "political" activities such as these are no longer a matter of only convincing the people on their own, they are a result of the mobilisation of technology, the inscriptions which machines provide, the enlistment of non-human allies who do the convincing for the principal.

11.3 Health Policy: "A History of Problematisations"

This research is situated with a view of the organisation as being merely one point within a network which is constituted by a broad set of interrelationships. This network includes other public sector institutions and powerful lobby groups, which seek an influence over public policy choice. It is within such an environment that the conditions of possibility of accounting change develop. Chapters 5 and 6 set out to provide a discussion of these influences and describe the problematisation of health care, the promotion of solutions which mobilises private sector management techniques and accounting in particular. These are some of the more specific factors which are also linked to general movements which have affected the way public sector provision of services is perceived. Not all of these factors/conditions are of equal strength. Some come to matter more than others and are better able to develop stronger metrological chains (Latour, 1987).

Latour suggests that essentially similar processes are at work at different levels within society "there are only differences of scale" (Latour, 1993, p.131) and that changes are effected through networks of relationships at the group, organisational and the societal level. In this respect the activities of the casemix people are not dissimilar to those of the Business Roundtable or Treasury. Spokespersons from these organisations are all interested in building support for their own perspective at the expense of the views of opposing groups, that is problematisation. Within the hospital the casemix people set about achieving the spread of their ideas by seeking to bring in convincing technology and enrolling other people within the organisation.

Such representations of health care, as are of concern to Chua (1995), strengthen bureaucratic notions which view health care provision not as a social issue but as part of the

macroeconomic problem of managing the New Zealand economy. There are clear links between the implications of actioning accounting within the health sector and the problematisation of health policy more generally. Though initially the problematisation of health might be seen as the initial stage of introducing change to the health sector, subsequent change is reciprocally affected by the availability of accounting inscriptions. These accounting inscriptions increasingly serve to justify 'action at a distance' which serves to strengthen the use of the accounting rhetoric within the health sector. In effect the network creates, in part at least, its own demand for information, which serves to validate the implementation of accounting and other information technologies.

11.4 The Spread of Accounting Knowledge at the Hospital: The Inscription of Clinical Practice

Casemix accounting allows the presentation of a reality through a constructed set of DRGs which provide standardising definitions of clinical procedures and DRG cost weights which are manipulated in certain ways. As the casemix technology is extended into the organisation the faith that supported the initial belief in casemix is reinforced as different analysts come up with similar definitions of cost centres, and develop similar classifications of expense items. Increasing numbers of people are enrolled, more consistent approximations and equivalences are produced by the manipulation and inscription of data, and more expert spokespersons are found to support different and often disparate elements of the system.

As the network spreads throughout the organisation:

...a whole series of relays [produces] a simulation or good enough reproduction of a pre-existing reality; the fact that this reality is itself yet another set of representations (accounting costs extracted from the hospital's general ledger, patient data extracted from medical records) which are translated differently. In effect, representations (DRG costs) that refer to other representations (ledger accounts, medical records) are now accepted as approximations to the real thing (Chua, 1995, p.141).

Chua reports on an aspect of the use of network relationships through which 'experts legitimated and contributed additional degrees of credibility to the accounting numbers produced by the Yale Cost Model (YCM)' (Chua, 1995, p.137). Chua quotes from a university research report which made use of regression analysis to make comparisons between the Australian and US DRG cost numbers:

These results [statistical correlation's of Australian with American data] are very reassuring in that despite all the data problems and the other sources of error discussed above, the DRG cost estimates display a pattern of consistency between each hospital (University document, 1991 as quoted in Chua, 1995, p.137)

Thus other distant inscriptions were used to add additional legitimacy to the locally produced DRG inscriptions. Similar actions were carried out at Health Waikato. The DRG cost numbers produced at the hospital were compared by the casemix team to whatever comparative data were available. DRG cost numbers were available for Victoria, Australia, and these were used to provide rough comparatives to HW numbers. In another instance the numbers which had been created to provide costs for blood products were compared to such cost numbers from other major CHEs, including Otago and South Auckland. Yet in this instance the modelling of blood product costs was essentially curtailed as a consequence of having achieved a 'good approximation to the costs of other health providers' (Interview, October 15, 1994). Some surprise at such an achievement was expressed, since these costs were the result of an arbitrary allocation of a significant amount of joint cost. These allocations were carried out quite independently in different CHEs so one might have expected a greater divergence than did eventuate. On the other hand it was noticeable that none of these comparisons involved statistical analysis and there also appeared to be some selective use of available blood product cost numbers. In particular Otago figures were given prominence because 'the [casemix] people down there knew what they were doing' (Interview, October 15, 1994).

There were other indications of the increasing significance played by the casemix system in the operations of the hospital. Within the hospital it became increasingly usual for people in managerial positions to ask how they might best use accounting information, what contribution should they seek from casemix information. The nurse manager in Ophthalmology expressed some concern during an interview at a delay in the casemix team responding to her requests for help in 'letting her know how to interpret the [clinical] budget report for her unit' (interview, 1st June, 1995, see discussion in chapter 9, section 9.4.1). The very presence of the accounting technology was sufficient at this stage to arouse interest. People were it seemed unwilling to risk ignoring the new source of information in case they appeared to not be 'up with the play'. In consequence it was possible for the technology to extend its influence to spread throughout the organisation as people accepted its black boxes and began to use the resulting "facts" and figures. It is in this manner that Latour (1987a) describes the process through which science becomes accepted and technology becomes part of society.

Spokespersons were invited to speak to HW clinicians on the benefits of casemix information and budget holding (see earlier discussion in Chapter 7, section.7.5, see also the Herald 1994, 27th October, p.7). By early 1996 clinicians were being invited to take managerial responsibility by heading up clinical directorates within a restructured and further decentralised organisation.

The clinical budgeting project at HW could be seen as a fabrication of the 'facts' (see Latour, 1987a, p.21-27). Clinicians were exhorted through different means to take on an economic interpretation of their activities. Diagnoses were to be recorded in a manner which afforded a better opportunity to apply DRG codes to episodes of treatment:

If at the time of discharge, a diagnosis is probable, suspected, likely, questionable, possible or still to be ruled out, the condition should be stated as if it existed or was established. This is preferable to vague statements such as abdominal pain. (Health Waikato DRG Information, p.5)

Precise economic representation appeared not to be a crucial factor in the implementation of clinical budgeting at HW either. The implementation process was partial and contained many compromises. People within the hospital began with differing degrees of belief in the technology. Indeed many existing staff were extremely cynical having seen earlier attempts to implement casemix systems fail to make any impression on the workings of the organisation.

During implementation, problems developed which required numerous decisions to be made. Typically at HW, rather differently to the situation which Chua describes in the Australian context, these decisions often were left to individuals or very small groups, rather than being the subject of deliberations by committee. Indeed the implementation of casemix accounting systems at HW was characterised by an apparently extremely decentralised decision making process. Often a single casemix accountant working in an operational area would decide independently on the basis of an overhead allocation, the application of a RVU (see discussion in chapter 9, section 9.3.2) formula or the adoption of some other conventional piece of accounting technology. What emerged from this process was a relatively rapid implementation of different aspects of the project in some operational areas than others. There was little co-ordination, but this approach did result in the ability to develop expertise in particular individuals which became recognised and called on later as the different operational areas considered implementation of parts of the casemix or accounting technology which had been used in other units.

The nature of this process again reinforces the impression that clinical budgeting at HW was not about the accurate representation of an underlying economic reality, but rather about the provision of inscriptions and representations which would serve to generate 'numbers [which] were consistent/factual enough to hold together diverse purposes' (Chua, 1995, p.138). As a consequence we may see

... account-fabrication was a decision-laden process rooted in faith and shot through with the Social. Reality did not come first but after socialised processes of making and judging representations. (Chua, 1995, p.138).

The role of the accounting technology in making possible these aggregations of data are crucial. The ability to represent 'at a distance' complex situations is a clearly recognised attribute of the successful accumulation of knowledge (see Latour, 1988b). The power of accounting systems to produce inscriptions which enable the managers to apply 'action' and control 'at a distance' is an important contributory factor in explaining the popularity and acceptance of accounting systems (Robson, 1992).

11.5 Facts from the Sociology of Translation

Technoscience is typically in a state of flux, settled science is achieved only when 'we' are convinced that nature has indeed been represented. In other words only when sufficient numbers of people have been enrolled can we say that the evidence is convincing, that "facts" have indeed been established. In the case of the health reforms and the associated provision of financial and clinical "facts" from systems such as casemix, developments within the hospital are well short of producing scientific facts. Given the objects that are subject to measurement, it remains likely that implementation will be a continuing process. But the inscriptions produced are having an impact both within and beyond individual organisations.

Policy is established and refined in an ongoing process as translations are effected. Implementations of certain aspects of the reforms progress in a relatively unstructured manner within and between institutions, as managers seek to build alliances and discover change may be more "effective" or easily effected in one area of the organisation than in another. New allies are brought in and others are dispensed with as the opportunities present themselves. Human allies and detractors at the highest level within the organisation are encouraged, isolated or replaced where ever possible. Accounting technologies are recruited in an effort to

extend the network in one dimension or another. The role and developments in accounting systems have been examined in this thesis. The contribution of these technologies of calculation are likely to continue to fulfill a similar role in the future.

Accounting and other information systems begin to combine data in ways which may only have been partially predictable. As systems are implemented possibilities arise which prompt reactions and actions which were not apparent or mere possibilities at an earlier stage in the change process. In particular, accounting system packages may be implemented only over a significant period of time, as the organisation digests parts of and implements elements of this complex technology.

Certain modules of the Transition package have been implemented within the hospital over a period of several years. Some parts of these developments have been successful, while others have fallen into disuse, at least for the time being. In some units attempts to introduce management reporting using the DCM (Departmental Cost Manager) software have been unsuccessful (see discussion in chapter 9, section 9.3). Similar flexible budget reports have been effective in enrolling managers in Clinical Support areas but have not become part of the network of management in some Surgery wards. In some cases the accounting has been taken up by individuals on an ad hoc basis.

The form of the implementation process has led to a considerable degree of freedom for individuals and groups to act, and to choose. In the hospital, members of the casemix implementation team have sought to respond in quite different ways to the imperative of casemix implementation. In the case of the Clinical Support Services Division, the development toward casemix has taken a strongly accounting orientation. Other divisions and other units have had quite different experiences with casemix implementation.

Within the Surgery Division the casemix manager approached the change process by working closely with the nursing managers who he felt were receptive to system change. Some of the nursing managers were effectively enrolled into the casemix project and then sought to further enrol others, particularly clinicians, into aspects of the project. In the case of the Surgery Division there was also considerable support available from the business manager of this division. He played an especially crucial role in encouraging the development of the clinical coding system. This system which was to adopt ANDRG coding eventually was recognised

to be a key data source for the Casemix system itself. Implementation of clinical coding was approached as a selective process within the division. Surgery consists of a number of distinct areas of specialty and responsibility for a number of physically separate surgical units in the form of operating theatres and surgical wards. This diversity within the organisation made it possible and perhaps desirable to choose units within the division for selective implementation. This process clearly enabled units to be chosen which were managed or administered by people, often in the nurse manager positions, who were receptive to change.

Other divisions were to see still other ways in which the change process might be effected. Casemix came to represent initially at least different things to different people within different divisions. Figure 11.1 indicates one way in which the different aspects of the casemix project have been conceptualised within the hospital. Not only was this diagram used as a representation of the crucial areas of casemix, it was also used by the casemix project manager (interview, 25th August, 1995) to illustrate comparative progress within different divisions and to encapsulate key differences among the casemix people within the divisional structure. In this manner X might be regarded as being strong on clinical aspects of casemix while Y might be more so on accounting aspects.

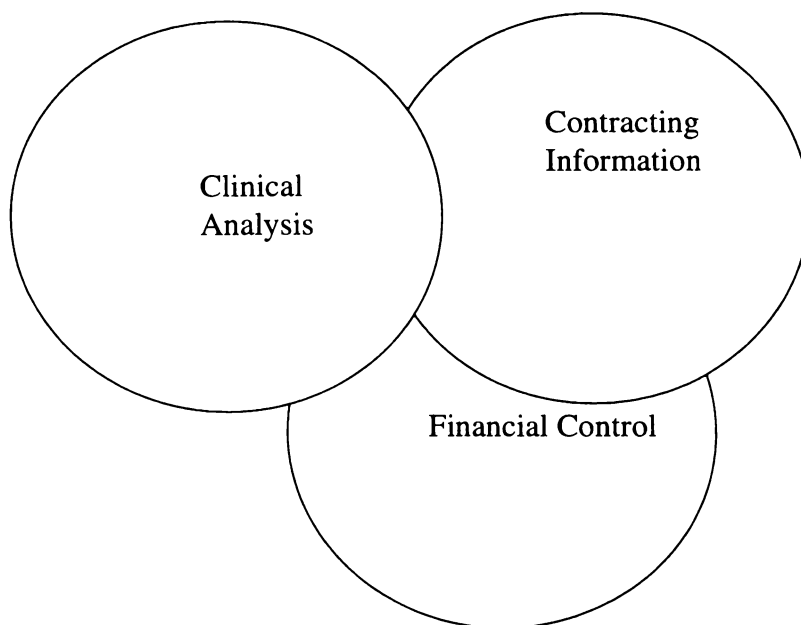


Figure 11.1: Elements of the Casemix System

This form of "inscription" was also an interesting way of representing the progress on casemix, at a point in time, in a segment of the organisation. Alternatively this could be regarded as a guide to where the relative weaknesses in systems development in parts of the organisation

existed, at a point in time. Such representations were used as a guide in allocating people with certain skills, or who possessed certain qualities, around the casemix project. Not only were there different emphases placed on aspects of the system implementation among the different divisions, but there was also a change in the import of crucial elements of the casemix system requirements over time. These changes affected the divisions differently and at different stages of the overall implementation. It is of especial importance to note that these changes in priorities and stages in implementation could not have been accurately planned or anticipated entirely in advance, but are best seen as being the result of the coming together of, in many instances, the effects of diverse activities and unintended consequences as the implementation process unfolded.

11.6 Contribution of the Research

The most significant departure in my thesis from the perspective of previous accounting literature is the attempt to depict accounting systems as “actant”. I see and have described these systems, of information technology and accounting technique, as central to the constitution of our organisations. Hospital culture, work patterns, and staff interrelationships have indeed been affected by the inscription of clinical data and the reporting of cost and profit numbers by unit, division and clinical procedure. In the hospital as in other organisations we delegate to information systems. I have described the way in which these “quasi-objects” which certainly include accounting systems come to play a part in influencing the behaviour of organisational members. My research has sought to explicate the change process as a process of translation. Traditional accounting techniques have been explicated as “black box” technology with which the organisation has been redefined in economic terms.

Together with other devices the use of accounting techniques may be seen as a central part of the process through which change is made acceptable within the organisation. Supporters are enrolled into the change process in part by being exposed to the accounting inscriptions which are used to represent the cost and profit “reality” of their unit and the whole organisation. The research process has involved detailed investigation on a case by case basis to enable a thorough description of the accounting techniques being put in place.

My research is concerned primarily with the effects of systems change within a single, large

health provider. In contrast Chua's (1995) research seeks to describe the reactions and impressions of a small, select group of enrollees who have been brought together to re-present clinical practice at a small number of Australian hospitals using the Yale Cost Model (YCM). The exercise though major in terms of its use of resources, period and involvement of a significant number of people was essentially "off line". The "Project" was carried out using data collected from the information systems of the participating hospitals and consisted of work to restate this historic information in casemix terms following the YCM. There was little involvement of hospital personnel and little change within the hospitals involved in the study. Chua suggests that the project had little impact on any of the organisations at the point where her case study finished.

The case-study finished at the end of the run of the Model. At that point the casemix data generated had not been widely circulated to doctors or nurses and none of the hospitals used it for internal management purposes. The data had essentially been presented to some senior administrators (Chua, 1995, p.142).

In contrast at HW the implementation of casemix accounting was not restricted to an ex-post modelling exercise but concerned a complex implementation of accounting and related information systems which were able to provide detailed clinical budgeting information. I have studied an extensive accounting system producing ongoing actual against budget casemix comparisons and involving system changes which have had effects across a large number of operational, service and administrative units and people throughout the hospital.

A distinctive contribution of my research and research questions concerns the level at which I am seeking to describe the processes at work and the attempt to incorporate a case analysis of individual elements of the accounting implementation process. This has enabled me to indicate more clearly the part played by accounting technology and technique in the change process. While other writers (notably; Chua, 1995; Bloomfield et al, 1992; Rea and Cooper, 1989; Preston et al, 1992) have sought to use similar theoretical frameworks to examine the role of accounting in health sector changes, their studies have been at a much higher level within the management of health sector organisations. These studies have provided a level of analysis which addresses broader issues of the relationship between accounting systems and the process of organisational change. Useful insights have been revealed at the organisational and senior management level of the processes at work within the organisation in a period of change and reform. In contrast, the present study attempts to describe the experiences and perceptions of medical and managerial/financial staff at a work unit level within a single

hospital. A part of this process has involved investigation of the implementation of traditional accounting technologies in unfamiliar environments.

In contrast to other contributions to the accounting literature my research has placed much less emphasis on "controversies" and resistance (cf. Preston et al, 1992; Ezzamel, 1994; and to a lesser extent Bloomfield et al, 1992; Chua, 1995). My research context at Health Waikato has been characterised by a lack of effective resistance. At the centre of my story is the successful spread of technology and the building of extensive networks particularly within the hospital. This is not to say that there has been no resistance, no opposition, but that where there has been controversy it has been resolved, or defused, in a manner consistent with Latour's processes of problematisation, enrolment and mobilisation. In this sense I believe the events described in this thesis confirm the power of technology and people together to provide a convincing structure to others. Given the controversial nature of health reform the introduction and spread of the technology has been in many ways remarkable.

At the national level health policy has taken a central role in relation to political decision making. It has been argued that Health was the key issue of the 1996 election (McLoughlin, 1996, p.69-77). Within HW the effective spread of casemix and use of related management technology has been relatively successful, if measured in terms of the influence and take-up of the technology. Other CHEs have been less successful in making a change to a different environment and set of practices (Brett, 1996, p.86-94). Brett describes a situation of considerable animosity and fundamental disagreement which has characterised attempts to introduce managerial priorities at Christchurch hospital and the Canterbury Health CHE.. The latest of three CEOs to leave in 5 years resigned in May, 1996, was quoted in the Christchurch Press as remarking that "managing doctors is harder than herding cats" (ibid, p.86).

While other writers have tended to report evidence which is certainly consistent with Latour and the sociology of translation, especially there is a noticeable tendency for these writers to appear to celebrate resistance. Ezzamel (1993) relates a story of the success of a technically competent group in enrolling others and resisting change. He tells of the effectiveness of resistance in a controversy and the maintenance of the status quo, at least in the short term. Chua (1995) similarly tells of the lack of success of a group attempting to enrol clinicians into a casemix system in Australian hospitals. While the celebration of resistance is understandable it hardly seems representative of a period of time during which most commentators have

reported on the remarkable ability of the New Right to expand their influence throughout our societies. Recent times have seen a continual spread of neoclassical economic policies in spite of growing opposition.

This thesis has indicated the manner in which accounting and information technologies may be understood, using insights based on Callon and Latour's sociology of translation, to be critical elements in the networks which enable change within organisations. Accounting technologies provide an authenticity to the promoters of the change. Accounting numbers provide an overwhelming and convincing representation of an "economic reality" which serves as both a persuasive and a generally "faithful/reliable" vehicle in the process of recruitment of people to the change process and a means of providing direction to the reforms themselves.

11.7 Reflections on the Research

In this thesis I have described the manner in which technology and other allies have been joined in a process at the national and particularly the institutional level, within a large regional hospital, which has begun to effect ideas and create new facts. Casemix has made a difference within Health Waikato. People now follow different routines and clinical practice appears to have been influenced in at least some instances. External relations have also been affected. Contracting has influenced the operations within the hospital but such arrangements have also impacted on who does what within the New Zealand health system. Casemix and DRG coding have enabled "action at a distance" by the Ministry of Health and Treasury through such processes as Workout. Health organisations and clinical practices have been inscribed and thus made visible.

11.7.1 Problems of Methodology

I have found Latour's theories of immense benefit in providing an attractive explanatory frame of reference. Though I have experienced some frustration in trying to decipher Latour's philosophical position I nevertheless regard the effort spent reading such material as of great benefit to my research. A useful avenue for future research would be to further pursue the locating of Latour and his theories from a philosophical and methodological basis. This is presently not clearly established. Even Latour's contributions to the sociology of scientific

knowledge have defied categorisation and analysis. Potter (1996) makes the following comment in describing omissions from his text:

[another]...limitation is the failure to address seriously Actor Network Theory developed by Bruno Latour, Michel Callon and John Law. **This is an exciting approach to facts and knowledge which has important implications for the study of fact construction. Yet I have been unable to decide whether it provides an organizing frame within which some...ideas... could be situated, or whether [it]...raises problems for ...[such a] frame[work]. My rather weak solution in this text is to attempt neither situation or critique.** (Potter, 1996, p.10, emphasis added)

This acknowledgement by Potter gives some idea of the problems of locating the contribution of Latour and colleagues. Potter goes on to give some emphasis to both Callon and Latour in several chapters of his text.

I have described aspects of Latour's philosophical position earlier, particularly in chapter 3.1, but would certainly not see my contribution to explicating these concepts as being at all complete. Latour though eschewing much of extant philosophy nevertheless borrows many concepts from that philosophy also. In this regard I have found Latour, among modern philosophers, most like Bhaskar. Bhaskar (1994) seems intent on a project through which he seeks to synthesise much of the great philosophers of the past. In this sense I believe that Bhaskar and Latour are engaged on a similar exercise. I would regard Latour as rather more audacious in his approach to philosophy, epistemology and ontology than Bhaskar.

Constructs such as translation, the concept of "black boxes" and the interpretation Latour places on the use of rhetoric in controversies and the production of facts have been very helpful to my research. Such constructs have provided a framework and a sensitising device which has become second nature in my research and attempts at interpretation.

As mentioned above Latour does not fit neatly with other social theorists. Though Latour has been used by other writers in the accounting literature, in most instances this has been unduly selective. Chua (1995) is perhaps closest to taking Latour's theories seriously as a framework of explanation, but she suggests that her acceptance of Latour does not extend to his insistence on a "symmetrical anthropology". Chua is not prepared to accept Latour's argument to treat human actors symmetrically with objects, machines and technology, and view accounting technology as an "actor". Though this is certainly a conventional interpretation it eschews a central plank of Latour's research methodology, that we must treat human and nonhuman elements, equally, without privileging the one or the other. Perhaps it is this aspect of Latour

which I find most attractive. Indeed to me it seems only that Latour is arguing for a research methodology which is explicit, if controversial, in the position it takes on both human agency and social structure (cf. Bhaskar, 1986, 1994).

11.7.2 Research Methods and the Presentation of an Authentic Research Story

I should repeat a warning that I made earlier in my thesis, in chapter 3, where I suggested that there are inherent dangers in using Latour's theories. Clearly a danger exists in research informed from a perspective which is so committed to a symmetrical approach to the explication of the human and the technological. The researcher may easily fail to take one element or the other seriously. Perhaps leaning too far toward the social or placing too much emphasis on the technology. The latter could easily slip into an appearance of determinism. Indeed keeping a balance in the way that Latour describes is not a trivial requirement. In this research I have attempted to maintain a balance in the way that I have interpreted the roles of the human actors and the influence of the nonhuman "actors" or actants in line with a Latourian perspective.

There are inherent difficulties in presenting stories of the mixing of the social and the technical ("technoscience"), of human actors and technological actants. I appreciate that many social constructionist and indeed critical theorists have deeply held views of what constitutes the social, "human" agency and indeed the "presentation" of case "stories". I am of the view that I am not misrepresenting Latour, but I fully accept there are more conventional interpretive and "constructionist" approaches to the presentation of research "data"/evidence. I see the contradictions between Latour and more conventional sociology as being things I would like to address in time. I did not feel I could give a fair hearing to Latour and the alternative approaches and still retain coherence in this thesis.

Both Latour and John Law speak of "delegating" to machines and technology. This is not, necessarily or, ordinarily conscious. As a consequence it would seem improbable that we might expect to reveal the consequences of such eventualities through research methods which concentrate exclusively or primarily on the analysis of discourse, and the presentation of evidence in the form of "direct" quotes. On the contrary, following Latour it seems to me that the examination of inscriptions and documentation, and attempts to understand systems through interview and observation are much more likely to reveal the data which I feel to be

central. I fully accept that this is likely to cause problems of authenticity, of convincing readers of the importance and the level of detail of the empirical material etc. These are legitimate concerns I have for my research and most particularly its presentation to an academic audience. The resulting case studies are in some danger of appearing to be “like” a conventional “functionalist” case study.

I do not want to appear to say that Latour or ANT see no place for data collection through the analysis of discourse gained through interview, archives or other sources. Clearly this is not the case (see Latour 1988d and 1996). But this does not mean that all knowledge can be gained in this manner. It is much clearer to me now that authors such as Chua (1995) and to a slightly lesser extent Bloomfield (for instance, 1993) appear to favour the more conventional (interpretive research) approach of presenting much of their data and supporting description through direct quotation of participants.

I have argued above why I think this is not appropriate to my research emphasis. How can I provide data to support the manner in which I see technology taking over some of the decisions of human actors or affecting the direction of groups in society or within organisations through discourse when the whole issue of the impact of technological systems and inscriptions is their pervasive, rather than directly intrusive character (see Bloomfield and Verdubakis, 1997 for a discussion of “framing” devices). Latour (1994, *On Technical Mediation...*) argues that it is not possible to “study technical skill directly”, that we are still concerned with “meaning but no longer in discourse”(p.39). Some of Latour’s most simple illustrations of the impact of quasi-objects on behaviour, such as the key fob or the sleeping policeman, are clearly not amenable or tractable to research methods which privilege discourse. I may well be closing off certain avenues of theorisation by the particular emphasis I have chosen for my research, and indeed have left myself open to charges of “functionalism”. However, I believe that authors such as Chua are guilty of closing off important avenues of theorisation which are central to Latour’s ideas and I believe also to ANT more generally. I have tried in my empirical chapters to retain a technological emphasis which is necessary to reflect my view of Latour’s contribution to the broad sweep of social constructionist theorising.

11.7.3 Research Outcomes

Though there are clear outcomes I will claim for my research I would want to recognise their

nature as subjective and uncertain. I am effectively applying a poststructuralist perspective. Such approaches are difficult to categorise. But a key effect of such research is the acceptance of uncertainty, an acceptance of the partial and constructed nature of all knowledge.

What is different about my characterisation of accounting in this thesis from a critical perspective is its emphasis on accounting and accounting practice as central to the explication of accounting's role. I portray accounting as an actant, whose power is drawn from its placement within networks of accountability and the fabrication of information. I am claiming that accounting is powerful because of its black box character, because of its technological nature. If we do consider people to be the institutors of accounting systems then these people are effectively selecting accounting systems at least in part because of their nature as actants. Because they are able to constrain and at other times to liberate. Accounting possesses these powers which do enable "action at a distance". Accounting does bring with it the promise, if not the power, of remote control. Whether accounting is able to deliver on its promises depends on the circumstances which surround any implementation. I am suggesting at the hospital that though the jury is still out, accounting systems such as casemix have had considerable impact upon people within the organisation. I would want to defend my argument that these effects are real.

Work patterns are changed, decisions are made differently. At the same time I would be reluctant to say how different the decisions would have been without accounting. I would be reluctant to say that some groups have gained power as a direct result of the accounting system and health system changes. But this does not mean that I do not think all of these changes make a difference. It does mean that I would be reluctant to say this is because of accounting or that is because of a different organisational structure or a new secondary health care policy. The interrelationships are much too complex for simplistic assertions of cause and effect. In concluding I want to place my emphasis on a powerful explanation of why accounting is in fact so pervasive not on some rather simplistic view of what the implementation of this or that accounting has had.

I wanted, in my thesis, to take seriously the complexity which most poststructuralists argue is representative of the world. I believe that Latour's sociology of translation and ANT both offer conceptions of the nature of technology and machines which enable the researcher to take serious account of the role of such objects in providing explanations of social action. But as

a consequence of this line of theorising clear outcomes are in short supply. The purely “social” is played down. The outcomes are themselves complex arising from complex interrelationships. What effects there are, are not typically available to the researcher through the direct quotes of informants. In fact it would be counter-theoretical to suppose this to be any different. In part this must follow from the central argument which Latour makes about technology, and which I fully accept. This is that though the effects are powerful they rely for their power, at least in part, on their surreptitious nature. Contemporary society both within and outside of organisations is characterised by the pervasive nature of technology. Part of the argument about the power of such objects is their taken for granted-ness. Latour describes the strength of the collectives which we form together with science and technology. This strength is, in part, because of the intimate nature of the links between human and object. The technology is not out there it is in where we live and work. The technology is a part of our organisations and our social relations not some add-on.

11.8 Future Research

Accounting as a practice and as an object with its own existence and “agency” is placed at the centre of my research. In “seeing” accounting and accounting systems as being constituted by “black boxes” two questions naturally follow. One concerns the processes which surround the establishment of “facts”, ie. how “black boxes” are created or accepted (even if temporarily) within society. The second concerns the role of existing “black boxes” within society and organisations. What role does the accumulated knowledge which constitutes accounting play in the patterning of organisational life. Both of these are legitimate research topics. In this thesis I have tended to concentrate most upon the already existing black boxes.

The existing literature (Preston et al., 1992; Chua, 1995) has tended to concentrate on the first of these issues. This research has addressed the “fabrication” of accounting systems. Preston et al places much importance on “arriving before the technology becomes settled” (a phrase borrowed from Latour 1987a) in order to trace the creation of a “finished” system, a closed “black box”. These authors are concerned to explicate the manner in which “facts” become accepted as such. Though this is of interest to me as it was to Preston it cannot be the whole story, since as Latour clearly notices there are many more “closed” boxes than those seeking “closure”. In my study I am attempting to look at both. While it can be argued that the casemix

budgeting system has still not reached “closure” the same is harder to say of DRG clinical coding. Yet we still need to recognise that any of these “closed” boxes are potentially open to “re-opening”. There are interesting concerns around these two research aims. How to portray the role of already existing black boxes without giving the impression that they are closed for all time? That they are indeed only social constructions in that sense. How to balance the explication of the fragile nature of a new system implementation with the sometimes powerful influence of accepted accounting practice and technique?

There are issues of where to from here. What is missed in the reduced emphasis on the participants accounts. What is at stake in my interpretation of the human actors responding to the technology? Being in some ways subordinated to it. People do indeed delegate to technology and this does result in differing patterns of relationships than might otherwise be the case. Accounting research can, I believe, begin in this style to bring together different strands in the literature. No longer must we keep the “sociological” studies away from the technological (studies of accounting systems). Perhaps even functionalist concerns over accounting systems can be accommodated in this “constructionist” framework (Latour, 1997b, accepts “constructionist” as a description of his theorising but not the “social constructionist” label).

One might speculate that practitioners and professional managers may see the relevance of a research approach which takes technology seriously and which articulates accounting systems as “black boxes” - allies to be enrolled and instrumental in the enrolment of others. Allies which are sleek and impenetrable, like the obelisk in 2001: A Space Odyssey (Latour, 1994). At the same time it is important to realise that there is more at stake than this. Latour argues that it is not simply a question of superior force but much more a matter of the interrelationships, often weak and emergent, within networks which make the difference. In this sense it is more often, according to Latour, these weak connections which form the most influential elements in moulding outcomes.

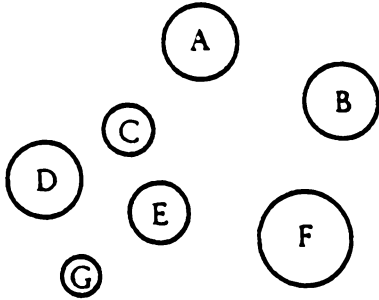
Latour’s theories offer much promise to accounting researchers because of their emphasis on the role of technologies (and techniques) in ordering and influencing our organisational “collectives”. There will be concerns that such theorising is letting determinism back in “by the back door”. I cannot defuse such criticism or reassure such concerns. I share with Latour an optimism over the role of technology and science within society. At the same time I accept

there is always a dark side to “progress”. It is always going to be possible to identify a dark side to accounting and accounting systems. Oppression, exploitation, surveillance, power and control are present in accounting system implementations in the planning, control and budgeting areas. In using Latour it does not follow that everything in “the garden is rosy” but, I believe, that he does bring a more balanced view of the role of technology into society than perhaps some other writers. Latour is not about an end of power and an ignoring of oppression, but about great scepticism of the power of some omnipresent being or beings.

Disparate views have been a feature of the accounting literature for the last two decades and this is likely to continue. Given this culture among the academy there is wide acceptance of the multivalent nature of “reality”. In accepting that people perceive and are able to portray differing realities I am comfortable with the application of different theoretical interpretations to similar situations. Alternatively I would strongly maintain that there are some extreme views expressed in the literature which I feel fail to give adequate regard to positive aspects of our existing social “collectivities”. In part this may be due to a failure to “see” or it may be part of a deliberate underplaying of the beneficial aspects of which technology, even accounting systems, bring to society.

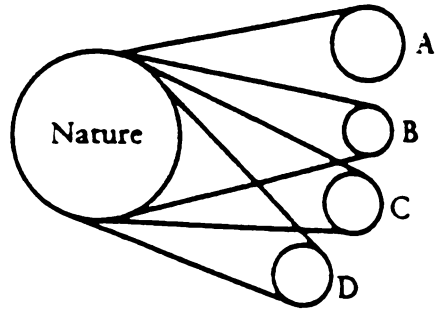
The examination of Latour’s methodology is an intriguing topic which I would like to take up in the future. Such a literature is beginning to develop (notably Elam, 1998). I find Latour’s ideas both challenging and attractive and I have become very committed to them.

Appendix 1 - Latour's Relativism and Universalism



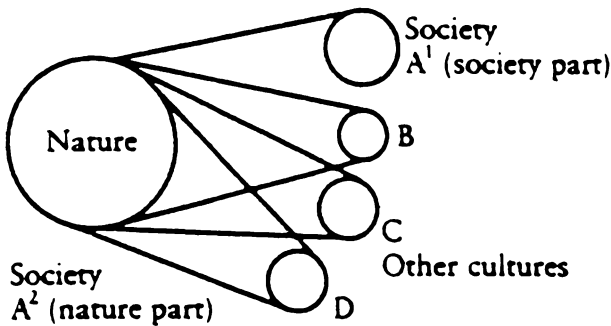
ABSOLUTE RELATIVISM

Culture without hierarchy and without contacts, all incommensurable; Nature is bracketed



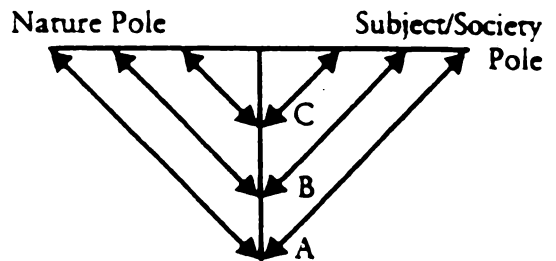
CULTURAL RELATIVISM

Nature is present but outside cultures; cultures all have a more or less precise point of view toward Nature



PARTICULAR UNIVERSALISM

One of the cultures (A) has a privileged access to Nature which sets it apart from the others



SYMMETRICAL ANTHROPOLOGY

All the collectives similarly constitute natures and cultures; only the scale of the mobilization varies

Source: Latour, 1987, p.105.

Transition Case - Mix System: Illustration

Inpatient Service Line Profile

Cases (Discharges)	July	Aug	Sept	Oct	Nov	Dec	Total
Cardiothoracic	41	27	16	23	25	27	159
Ear, Nose and Throat	120	117	106	131	127	113	714
General Surgery	273	256	262	265	271	251	1578
Intensive Care	5	13	11	16	7	15	67
Ophthalmology	72	103	107	85	89	77	533
Orthopaedic Surgery	244	283	272	265	237	262	1563
Other	250	189	337	289	312	323	1700
Total: Discharges	1005	988	1111	1074	1068	1068	6314

Average Length of Stay	July	Aug	Sept	Oct	Nov	Dec	Total
Cardiothoracic	10.7	11.4	8.6	9.1	8.8	9.3	9.8
Ear, Nose and Throat	1.2	0.9	1.2	1.1	1.3	1	1.1
General Surgery	3.6	3.7	2.8	3.2	2.6	2.9	3.1
Intensive Care	10.2	7.9	9.3	5.4	5.7	6.3	7.1
Ophthalmology	1.7	1.9	2.4	2.1	1.7	1.8	2.0
Orthopaedic Surgery	7.3	7.5	8.4	8.3	5.6	5.9	7.2
Other	1.9	2.2	1.6	1.7	2	1.6	1.8
Total: Discharges	36.6	5.1	4.9	4.4	4.0	4.1	4.6

Principal procedure: 1359
Other E/C Extraction of Lens

Discharge Clinician	Cases	Min	Ave	Max	Cost per Day	Total Cost
Dr. A	64	1	1.7	12	\$1,250	\$136,000
Dr. B	46	1	2.3	5	\$1,250	\$132,250
Dr. C	9	1	2.2	3	\$1,250	\$24,750
Total	119	1	2	12		\$293,000

Ophthalmology: Cases and AVLOS by Clinician

DRG	Description	Dr. A	Dr. B	Dr. C	Total	Dr. A	Dr. B	Dr. C	Total
		No. of Cases				AVLOS			
039	Lens Procedures	159	86	37	282	1.9	2.2	1.2	1.9
042	Intraoc Proc Iris	39	23	19	81	3.2	1.7	6.4	3.5
047	Other Disorders	22	12	19	53	1.9	2.2	0.8	1.6
040	Extraoc Proc Orbit	13	24	10	47	2.2	0.6	2.3	1.4
036	Retinal Procedures	10	5	3	18	3.5	6.4	2.4	4.1
	Other	21	12	19	52	4.2	3.2	1.7	3.1
		264	162	107	533				

DRG 039: Lens Procedures by Clinician

Procedure	Description	Dr. A	Dr. B	Dr. C	Total	Dr. A	Dr. B	Dr. C	Total
		No. of Cases				AVLOS			
1341	Phacoemul./ASP C'act	81	23	16	120	2.4	1.8	1.1	2.1
1359	E/C Extraction of Lens	64	46	9	119	1.7	2.3	2.2	2.0
1369	Cataract Extraction	8	17	2	27	1	2	1	1.6
1319	I/C Extraction of Lens	4	0	9	13	1.3	0	3.2	2.6
	Other	2	0	1	3	3	0	2	2.7
		159	86	37	282	2	2	1	2

Appendix 3 - DRG Coding Illustrations

THE IMPACT OF POOR DOCUMENTATION ON DRG ALLOCATION

The following tables demonstrate the difference that accurate and precise documentation can have; as expressed by the DRG the inpatient episode is allocated, and thus the DRG weight. The DRG weight (Wt) is a measure of what it costs (and therefore what you would be reimbursed) to treat a patient that falls into that particular DRG. It should be noted that a DRG that has a longer average length of stay (ALOS) associated with it, may in fact have a lower weight than a DRG which a shorter ALOS.

ABBREVIATIONS

cc complication or comorbidity
 OR operating room
 w with
 w/o without

MDC: Disorders of the ears, nose, mouth and throat

Medical Profile	DRG	Description	Wt	ALOS
Otitis Media	134	Otitis Media & URI age > 9 w/o cc	0.4900	2.75
Otitis Media and Diabetes type I	133	Otitis Media & URI age > 9 w cc	0.9800	5.57

MDC: Disorders of the respiratory system

Medical Profile	DRG	Description	Wt	ALOS
Pneumonia	179	Simple pneumonia age > 9 w/o cc	0.8900	6.19
Pneumonia and COAD	178	Simple pneumonia age > 9 w cc	1.6700	9.58
Pneumonia with biopsy of lung	165	Other respiratory system OR procedure w/o cc	1.3500	4.86
Pneumonia and atrial fibrillation with lung biopsy	164	Other respiratory system OR procedure w non-major cc	1.9400	9.15
Pneumonia and COAD with lung biopsy	163	Other respiratory system OR procedure w major cc	3.3800	13.02

MDC: Diseases and disorders of the hepatobiliary system and pancreas

Medical Profile	DRG	Description	Wt	ALOS
Cholecystitis with cholecystectomy	367	Cholecystectomy w/o cde	1.3400	5.31
Cholecystitis with cholecystectomy and common bile duct exploration	366	Cholecystectomy w cde w/o cc	2.3700	12.41
Cholecystitis and urinary tract infection with cholecystectomy and common bile duct exploration	365	Cholecystectomy w cde w cc	4.1900	18.95

MDC: Diseases and disorders of the digestive system

Medical Profile	DRG	Description	Wt	ALOS
Abdominal pain	633	Oesophagitis, gastroent and misc digest disorder age >9 w/o cc	0.3800	2.02
Peptic ulcer	325	Uncomplicated peptic ulcer	0.4500	2.74
Chronic peptic ulcer with obstruction	324	Complicated peptic ulcer w/o cc	0.3800	1.62
Chronic peptic ulcer with obstruction and anorexia nervosa	323	Complicated peptic ulcer w cc	1.1700	6.09
Chronic peptic ulcer with obstruction with oversewing	310	Stomach, oesophageal and duodenal proc age >9 w/o cc	1.9400	8.71
Chronic peptic ulcer with obstruction and blood loss anaemia with oversewing	309	Stomach, oesophageal and duodenal proc age >9 w non-major cc	4.4700	17.75
Chronic peptic ulcer with obstruction and post operative AMI with oversewing	308	Stomach, oesophageal and duodenal proc age >9 w major cc	6.0600	21.01

MDC: Diseases and disorders of the skin, subcutaneous tissue and breast

Medical Profile	DRG	Description	Wt	ALOS
Adenoma of breast with open biopsy	498	Minor procedures for non-malignant breast conditions	0.6300	1.67
Adenoma of breast with quadrant resection	497	Major procedures for non-malignant breast conditions	1.1700	5.25
Adenocarcinoma of breast with local excision	496	Minor procedures for malignant breast conditions	0.8100	3.14
Adenocarcinoma of breast with sub-total mastectomy	495	Major procedures for malignant breast conditions	1.6000	8.82

MDC: Pregnancy, childbirth and puerperium

Medical Profile	DRG	Description	Wt	ALOS
Delivery with premature rupture of membranes	674	Vaginal delivery w/o complicating diagnosis	0.8100	4.04
Delivery with premature rupture of membranes and post partum haemorrhage	675	Vaginal delivery w complicating diagnosis	1.0000	5.02
Delivery with premature rupture of membranes and gestational diabetes mellitus	676	Vaginal delivery w severe complicating diagnosis	1.1900	6.14
Normal vaginal delivery and retained products of conception with a Dilation and curettage	677	Vaginal delivery w OR procedure	1.5200	5.71

NOTE: DRG is according to the AN-DRG version 2.1 which will be in use as of the 1 July 1995.

Appendix 4 - Departmental Budget Report

DCM 0400
RUN DATE 19 JAN 1995

HEALTH WAIKATO LIMITED
DEPARTMENT COST MANAGER
VARIANCES - FLEXIBLE BUDGET FORMAT
2039 WARD 1 E.N.T - 183

PAGE

	DECEMBER 1994		JULY 1994 THROUGH DECEMBER 1994	
	UNITS -----	COST -----	UNITS -----	COST -----
BUDGET	260	\$ 89,564	8,697	\$ 573,949
ACTUAL	420	95,134	23,675	562,007
TOTAL VARIANCE	-160	\$ -5,570	-14,978	\$ 11,942
PERCENT VARIANCE	-61.6%	-6.2%	-172.2%	2.1%
BUDGET		\$ 89,564		\$ 573,949
VOLUME ADJUSTMENT		-8,683		389,794
MIX ADJUSTMENT		1,052		-278,264
FLEXIBLE BUDGET		81,933		685,479
ACTUAL		95,134		562,007
FLEX BUDGET VARIANCE		\$ -13,201		\$ 123,472
PERCENT VARIANCE		-16.1%		18.0%
VARIANCE ANALYSIS:				
UTILIZATION:				
LABOR EFFICIENCY		\$ -15,510		\$ 166,055
LABOR PRICE		4,587		28,895
SUPPLIES		-2,443		-26,495
OTHER VARIABLE		347		-41,239
		\$ -13,019		\$ 127,217
FIXED COST:				
LABOR		\$ -291		\$ -4,401
EQUIPMENT		109		657
FACILITIES		0		0
OTHER		0		0
		-182		-3,744
TOTAL FLEX BUDGET VARIANCE		\$ -13,201		\$ 123,472

*** A NEGATIVE VARIANCE INDICATES AN INCREASE FROM BUDGET IN COST OR UNITS

DCM 0800
 RUN DATE 19 JAN 1995

HEALTH WAIKATO LIMITED
 DEPARTMENT COST MANAGER
 PRODUCT MIX REPORT
 2039 WARD 1 E. N. T. - 183

PAGE 1

DECEMBER 1994

JULY 1994
 THROUGH DECEMBER 1994

DESCRIPTION	UNITS			MIX		UNITS			MIX	
	BUDGET	ACTUAL	CHANGE	BUDGET	ACTUAL	BUDGET	ACTUAL	CHANGE	BUDGET	ACTUAL
D1 PATIENT DAY	81	102	-21	31.3%	24.3%	627	649	-22	31.3%	31.8%
D2 PATIENT DAY	102	229	-127	39.3%	54.5%	786	913	-127	39.3%	44.7%
D3 PATIENT DAY	43	67	-24	16.7%	16.0%	335	359	-24	16.7%	17.6%
D4 PATIENT DAY	7	8	-1	2.7%	1.9%	54	55	-1	2.7%	2.7%
D5 PATIENT DAY	5	2	3	2.0%	0.5%	39	37	2	2.0%	1.8%
D6 PATIENT DAY	0	0	0	0.0%	0.0%	1	0	1	0.0%	0.0%
D7 PATIENT DAY	0	0	0	0.0%	0.0%	1	0	1	0.0%	0.0%
D8 PATIENT DAY	0	0	0	0.0%	0.0%	1	0	1	0.0%	0.0%
DAY CASE	5	0	5	2.0%	0.0%	40	0	40	2.0%	0.0%
WARD OUTPATIENT	15	12	3	5.6%	2.9%	113	29	84	5.6%	1.4%
TRACHOSTOMY DRESSINGS	1	0	1	0.3%	0.0%	6	0	6	0.3%	0.0%
TOTAL	260	420	-160	100.0%	100.0%	2,001	2,042	-41	100.0%	100.0%

HEALTH WAIKATO LIMITED
 DEPARTMENT COST MANAGER
 COST TYPE / CATEGORY FLEX VARIANCES

DEPT: 183 - 2039 WARD 1 E. N. T.

COST TYPE	----- DECEMBER 1994 -----					----- JULY 1994 THROUGH DECEMBER 1994 -----				
	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE
VL	32,307	27,930	38,854	-6,547	-10,923	214,818	403,249	208,299	6,519	194,950
VS	9,253	8,287	10,730	-1,478	-2,443	59,249	35,926	62,421	-3,172	-26,495
VO	19,954	17,665	17,318	2,636	347	126,771	73,193	114,432	12,339	-41,239
FDL	8,665	8,665	8,956	-291	-291	52,578	52,578	56,978	-4,401	-4,401
FDE	8,915	8,915	8,805	109	109	56,421	56,421	55,764	657	657
FDF	0	0	0	0	0	0	0	0	0	0
FDD	10,470	10,470	10,470	0	0	64,112	64,112	64,112	0	0
TOTAL	89,564	81,933	95,134	-5,570	-13,201	573,949	685,479	562,007	11,942	123,472

DCM 0410
 RUN DATE 19 JAN 1995

HEALTH WAIKATO LIMITED
 DEPARTMENT COST MANAGER
 COST TYPE / CATEGORY FLEX VARIANCES

PAGE 2

DEPT: 183 - 2039 WARD 1 E. N. T.

COST TYPE: VL - VARIABLE LABOR

CATEGORY	----- DECEMBER 1994 -----					----- JULY 1994 THROUGH DECEMBER 1994 -----				
	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE
2	32,307	27,930	38,854	-6,547	-10,923	214,818	403,249	208,299	6,519	194,950
TOTAL	32,307	27,930	38,854	-6,547	-10,923	214,818	403,249	208,299	6,519	194,950

DCM 0410
RUN DATE 19 JAN 1995

HEALTH WAIKATO LIMITED
DEPARTMENT COST MANAGER
COST TYPE / CATEGORY FLEX VARIANCES

PAGE 3

DEPT: 183 - 2039 WARD 1 E. N. T.

COST TYPE: VL - VARIABLE LABOR

	----- DECEMBER 1994 -----			---- JULY 1994 THROUGH DECEMBER 1994 --		
CATEGORY	FLEX VARIANCE	EFFICIENCY VARIANCE	PRICE VARIANCE	FLEX VARIANCE	EFFICIENCY VARIANCE	PRICE VARIANCE
2 NURSES	-10,923	-15,510	4,587	194,950	166,055	28,895
TOTAL	-10,923	-15,510	4,587	194,950	166,055	28,895
	=====	=====	=====	=====	=====	=====

JCM 0410
 RUN DATE 19 JAN 1995

HEALTH WAIKATO LIMITED
 DEPARTMENT COST MANAGER
 COST TYPE / CATEGORY FLEX VARIANCES

DEPT: 183 - 2039 WARD 1 E. N. T.

COST TYPE: VS - VARIABLE SUPPLIES

CATEGORY	----- DECEMBER 1994 -----					----- JULY 1994 THROUGH DECEMBER 1994 -----				
	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE
1	654	579	1,025	-371	-446	4,202	2,423	7,061	-2,859	-4,638
2	555	439	434	121	5	3,548	2,209	2,292	1,256	-84
7	3,818	3,535	5,113	-1,295	-1,578	24,752	15,490	23,087	1,665	-7,597
12	1,138	1,000	861	277	140	7,930	4,895	10,059	-2,128	-5,164
20	686	608	932	-246	-324	4,404	2,540	4,355	49	-1,815
22	2,402	2,126	2,365	37	-239	14,412	8,370	15,567	-1,155	-7,197
TOTAL	9,253	8,287	10,730	-1,478	-2,443	59,249	35,926	62,421	-3,172	-26,495

DCM 0410
 RUN DATE 19 JAN 1995

HEALTH WAIKATO LIMITED
 DEPARTMENT COST MANAGER
 COST TYPE / CATEGORY FLEX VARIANCES

DEPT: 183 - 2039 WARD 1 E. N. T.

COST TYPE: VO - VARIABLE OTHER

CATEGORY	----- DECEMBER 1994 -----					----- JULY 1994 THROUGH DECEMBER 1994 -----				
	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE
10	124	110	0	124	110	811	467	723	88	-256
20	200	177	0	200	177	1,262	729	0	1,262	729
51	1,614	1,429	1,038	576	391	9,686	5,625	8,783	903	-3,158
52	274	243	274	0	-31	1,646	956	1,646	0	-690
53	6,702	5,933	7,119	-417	-1,186	47,130	26,951	47,548	-417	-20,597
54	2,841	2,515	2,841	0	-326	17,048	9,900	17,048	0	-7,148
55	7,580	6,710	5,318	2,261	1,392	45,478	26,411	35,071	10,407	-8,661
56	0	0	0	0	0	0	0	0	0	0
57	618	547	726	-108	-179	3,710	2,155	3,613	97	-1,458
TOTAL	19,954	17,665	17,318	2,636	347	126,771	73,193	114,432	12,339	-41,239

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DCM 0410
 RUN DATE 19 JAN 1995

HEALTH WAIKATO LIMITED
 DEPARTMENT COST MANAGER
 COST TYPE / CATEGORY FLEX VARIANCES

PAGE 6

COST TYPE: FDL - FIXED DIRECT LABOR

DEPT: 183 - 2039 WARD 1 E. N. T.

CATEGORY	----- DECEMBER 1994 -----					----- JULY 1994 THROUGH DECEMBER 1994 -----				
	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE
3	4,471	4,471	4,359	113	113	25,306	25,306	28,097	-2,792	-2,792
5	4,194	4,194	4,598	-404	-404	27,272	27,272	28,881	-1,609	-1,609
10	0	0	0	0	0	0	0	0	0	0
TOTAL	8,665	8,665	8,956	-291	-291	52,578	52,578	56,978	-4,401	-4,401
	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====

272

DCM 0410
 RUN DATE 19 JAN 1995

HEALTH WAIKATO LIMITED
 DEPARTMENT COST MANAGER
 COST TYPE / CATEGORY FLEX VARIANCES

DEPT: 183 - 2039 WARD 1 E. N. T.

COST TYPE: FDE - FIXED DIRECT EQUIPME

CATEGORY	----- DECEMBER 1994 -----					----- JULY 1994 THROUGH DECEMBER 1994 -----				
	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE
1	670	670	560	109	109	4,018	4,018	3,361	657	657
2	6,476	6,476	6,476	0	0	41,787	41,787	41,787	0	0
3	1,769	1,769	1,769	0	0	10,617	10,617	10,617	0	0
TOTAL	8,915	8,915	8,805	109	109	56,421	56,421	55,764	657	657

DCM 0410
 RUN DATE 19 JAN 1995

HEALTH WAIKATO LIMITED
 DEPARTMENT COST MANAGER
 COST TYPE / CATEGORY FLEX VARIANCES

DEPT: 183 - 2039 WARD 1 E. N. T.

COST TYPE: FDO - FIXED DIRECT OTHER

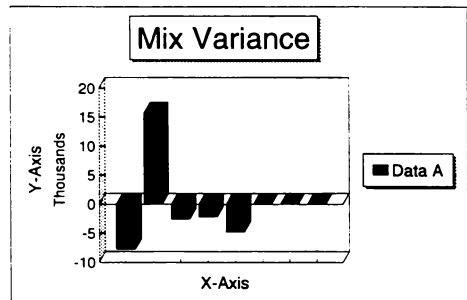
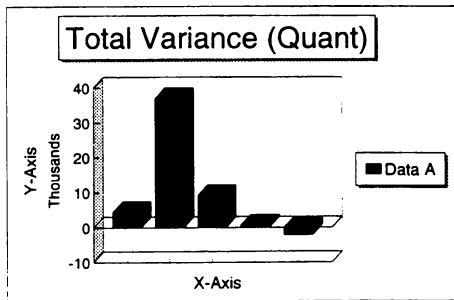
CATEGORY	----- DECEMBER 1994 -----					----- JULY 1994 THROUGH DECEMBER 1994 -----				
	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE	BUDGET	FLEX BUDGET	ACTUAL	BUDGET VARIANCE	FLEX VARIANCE
1	10,470	10,470	10,470	0	0	64,112	64,112	64,112	0	0
TOTAL	10,470	10,470	10,470	0	0	64,112	64,112	64,112	0	0

Appendix 5 - Spreadsheet Model of Transition Variance Calculations

Health Waikato: Surgery Division - Ward 183 E.N.T.

Description	Budget	Actual	Change	Bud Cost (total)	Budget	Bud Cost (var)
Patient Day D1	81	102	-21	210	17010	113
Patient Day D2	102	229	-127	291	29682	194
Patient Day D3	43	67	-24	380	16340	283
Patient Day D4	7	8	-1	542	3794	445
Patient Day D5	5	2	3	720	3600	623
Patient Day D6	0	0	0	898	0	801
Patient Day D7	0	0	0	1040	0	943
Patient Day D8	0	0	0	1111	0	1014
Total	238	408	-170	295.91	70426	

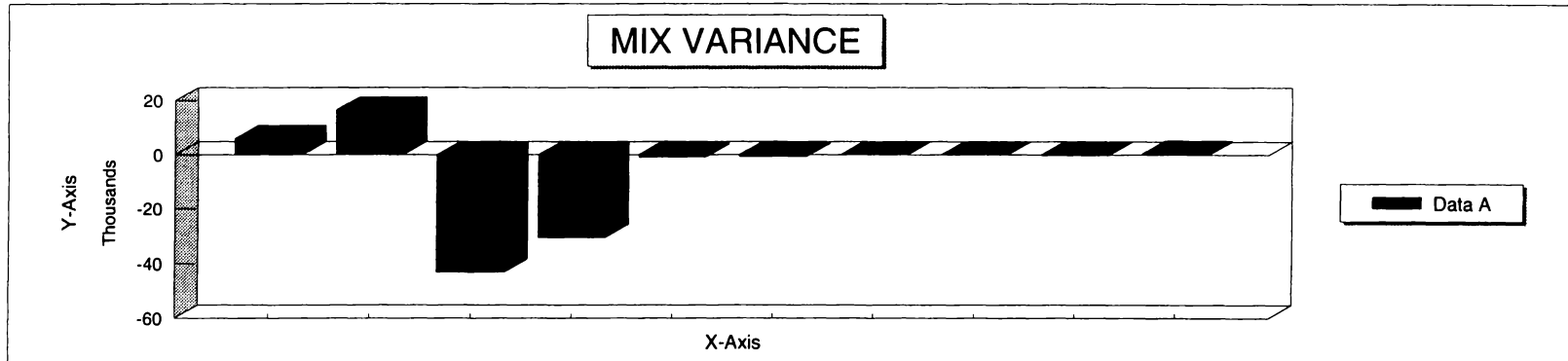
Std Mix Var	Budget at act volume	act units	Change	Mix Variance \$	Vol Variance \$ [Yield]?????	Quant Var \$ [usage]
Patient Day D1	139	102	-37	-7740		4410
Patient Day D2	175	229	54	15756		36957
Patient Day D3	74	67	-7	-2551		9120
Patient Day D4	12	8	-4	-2168		542
Patient Day D5	9	2	-7	-4731		-2160
Patient Day D6	0	0	0	0		0
Patient Day D7	0	0	0	0		0
Patient Day D8	0	0	0	0		0
	408	408	-0	-1435	50304	48869



Health Waikato: Surgery Division - Ward 7 Burns / Plastics (Feb 95)

Description	Budget	Actual	Change	Bud Cost (var)	Budget	Nurse hrs. per unit	Budget hrs	Act Outputs @ Std.
Patient Day D1	44	286	-242	26.11	1149	1.5	66	429
Patient Day D2	40	265	-225	78.32	3133	4.5	180	1192.5
Patient Day D3	268	38	230	130.53	34981	7.5	2010	285
Patient Day D4	116	13	103	208.84	24226	12	1392	156
Patient Day D5	2	0	2	339.37	679	19.5	39	0
Patient Day D6	1	0	1	469.90	470	27	27	0
Patient Day D7	0	0	0	574.32	0	33	0	
Patient Day D8	0	0	0	626.53	0	36	0	
Day Patient	4	0	4	26.11	104	1.5	6	
Out-pt.	51	120	-69	7.25	370	0.4	21.25	
Total	526	722	-196	123.79	65111		3741.25	2062.5

Std Mix Var	Budget at act volume	act units	Change	Mix Variance \$	Vol Variance \$ [usage]	Quant Var \$ Yield	B/Cost per hr	17.40354
Patient Day D1	60	286	226	5889			Actual Cost	65666
Patient Day D2	55	265	210	16454	[To break down		Rate var	7762
Patient Day D3	368	38	-330	-43056	need to be able to split		Actual hrs	3327.139
Patient Day D4	159	13	-146	-30538	the actual inputs up			
Patient Day D5	3	0	-3	-932	into D1, D2 etc.]			
Patient Day D6	1	0	-1	-645				
Patient Day D7	0	0	0	0				
Patient Day D8	0	0	0	0				
Day Patient	5	0	-5	-143				
Out-pt.	70	120	50	363				
	722	722	0	-52608	22009	31469		



Appendix 6.1 - List of Interviews and Participants

24/6/94	Joe Howells - Finance Director Willem Sandberg - member of TCB team
30/6/94	Ron Shaw - Business Manager, Surgery
1/7/94	Willem Sandberg - member of TCB team
1/7/94	Andy Reid - TCB Manager, Corporate
11/7/94	Willem Sandberg - member of TCB team
18/7/94	Bev Adlam - General Manager, Women and Child Division (member of TCB Steering Committee.)
20/7/94	Jack Havill - Surgeon, Surgery Division
22/7/94a	Stuart Gregory - Laboratory and Radiology Manager, Clinical Support Services.
22/7/94b	Don Mikkelsen - Bio Chem. Lab
22/7/94c	Peter Dunn - Senior Medical Officer - Director, Medical and Elderly Unit and Head of Waikato Cancer Unit (member of TCB Steering Committee.)
27/7/94	Julie Harris-Divisional Accountant, Women and Child Division
18/8/94	Greg Spring - Divisional Accountant, Surgery
26/8/94	Izolda Kazemzadeh - Audit and Contract Monitoring Manager, Midland RHA
2/9/94	Ron Shaw - Business Manager, Surgery
9/9/94	Willem Sandberg - Project Leader (TCB), Clinical Support
9/9/94	Andy Reid - TCB Manager, Corporate
14/10/94a	Graham Naylor - Deloitte (member of TCB Steering Committee.)
14/10/94b	Brian Mahood - Clinician- Medical Division (member of TCB Steering Committee.)
14/10/94c	Peter Dunn - Senior Medical Officer - Director, Medical and Elderly Unit and Head of Waikato Cancer Unit (member of TCB Steering Committee)
21/10/94a	Maartin Caspari - TCB Analyst, Surgery Division
21/10/94b	Peter Chapman - Senior Medical Officer - Medical and Elderly Division (member of TCB Steering Committee)
25/10/94	Ron Shaw - Business Manager, Surgery
28/10/94	Maartin Caspari - TCB Analyst, Surgery Division
2/11/94	Grant Storey - Blood Centre Manager, Clinical Support
4/11/94a	Joe Howells - General Manager, Finance Division

4/11/94b	Dr McDonald - ACC - Med Advisor
9/11/94	Willem Sandberg - Project Leader (TCB), Clinical Support
15/11/94	Margaret Unwin - Blood Transfusion Trust
16/11/94a	Director - Casemix Info. Services, Royal Albert Group, Melbourne
16/11/94b	Fiona Saunders-Francis - KPMG
11/11/94	Grant Storey - Blood Centre Manager, Clinical Support
14/11/94	David Lovatt - Commercial Manager, Midland RHA
14/2/95a	Marilyn Hardy - Manager, Medical Coding
14/2/95b	Catherine Perry - Medical Coder
17/2/95	Andy Reid - TCB Manager, Corporate
21/2/95	Greg Spring - Business Manager, Surgery
22/2/95	Andy Reid - TCB Manager, Corporate
24/2/95	Maartin Caspari - TCB Surgery
7/4/95	Maartin Caspari - TCB Surgery
7/4/95	Joe Howells - General Manager, Finance Division
3/5/95	Willem Sandberg - Project Leader (TCB), Clinical Support
5/5/95	Andy Reid - TCB Manager, Corporate
6/5/95	Brian Pankhurst - ex CEO Auckland Health CHE.
9/5/95	Ron Shaw - Theatre Manager, Surgery
12/5/95	Maartin Caspari - TCB Analyst, Surgery Division
15/5/95	Chris Fleming - TCB Accountant, Finance
15/5/95	Willem Sandberg - Project Leader (TCB), Clinical Support
16/5/95	Maartin Caspari - TCB Surgery
29/5/95	Willem Sandberg - Project Leader (TCB), Clinical Support
1/6/95	Robin McEwan - Nurse Manager, Ophthalmology
2/6/95	Robert Ebert - Anaesthetist, Surgery Division (Member of Coding Working Party)
29/6/95	Joe Howells - General Manager, Finance Division
25/8/95	Andy Reid - TCB Manager, Corporate
7/12/95	Andy Reid - TCB Manager, Corporate
11/12/95	Maartin Caspari - TCB Surgery
18/12/95	Tracy Kelly - TCB Manager, Hospital
1/2/96	Andy Reid - TCB Manager, Corporate
8/2/96	Andy Reid - TCB Manager, Corporate
18/12/96	Andy Reid - TCB Manager, Corporate

Appendix 6.2 - List of Meetings Attended

21/7/94	Meeting Observed - Coding Committee Meeting
18/8/94	Meeting Observed - Coding Committee Meeting
14/9/94	Meeting Observed - TCB Steering Group Meeting
29/9/94	Meeting Observed - Coding Committee Meeting
31/3/95	Meeting Observed - TCB Steering Group Meeting
7/4/95	Meeting Observed - Surgery Div. Directors Meeting
20/12/95	Casemix Working Group, Community Health Division
1/2/96	Casemix Working Group, Community Health Division

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