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Fabricating cost management and other systems in a mainframe integrated business system (IBS) environment: a critical accounting study

Sudhir Chandra Lodh

University of Wollongong

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Fabricating Cost Management and Other Systems in a Mainframe Integrated Business System (IBS) Environment:
A Critical Accounting Study

A thesis submitted in fulfilment of the requirements for the award of the degree

Doctor of Philosophy

from

UNIVERSITY OF WOLLONGONG

by

Sudhir Chandra Lodh
B. Com. (Honours) in Accy, M. Com. in Accy (Raj), MBA major in Accy & Fin (KUL, Belgium)

the Department of Accountancy

June 1994
Declaration

I hereby declare that this thesis has never previously been submitted for any other degree and is the result of my own independent research.

Sudhir Chandra Lodh
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Abstract

This thesis is a representation of a "critical accounting study" and is not only concerned with an understanding of the problematic "knowledge claim" but also examining the fabrication of accounting knowledge within a particular organisational and social context. This study supports the view: 'how little we know about the actual functioning of accounting systems in organisations' (Hopwood 1979, p145, cf. Burchell et al, 1980, Cooper 1981, Berry et al 1985, Laughlin 1987, Booth 1991, Preston et al, 1992, Chua 1993). As well, this study assumes that the roots of other meaningful yet uncertain social and political considerations of the actual functioning of accounting are in organisation(s). Moreover, central to this research programme is the belief that embarking on a major study is dependent upon the way in which the researcher (1) resolves the theoretical and epistemological disputes in 'the doing of research' (Chua 1988b) and (2) relates that to the analyses at the 'action-oriented' level - that is, at the level of empirical investigation.

An understanding is that the research strategies and the theoretical stance of 'mainstream accounting research' (cf Chua 1986), generally known as positivistic research, is limited in carrying out research on 'accounting-in-action'. Rather, the 'critical accounting' research is seen to have much more to offer in researching in such a context. Not only are the theoretical stance and research strategies of the critical accounting research diverse, they are growing. As a propaedeutical reflection, thus, the first part of this study is initially involved with an alternative theoretical discourse in understanding the problematic "knowledge claim" and the consideration of a socio-theoretical rationality in the doing of critical accounting research. In particular, at the propaedeutic level, the study adopted the Habermasian critical theory approach for such an understanding (cf, Habermas 1974, 1979, 1984, 1987). At another level, it adopted the work informed by Latour (1987) and that of his colleagues for a further understanding of the non-positivistic methodological corollaries to frame the 'methodical discretion' of the field study (cf, Preston et al, 1992, Chua 1993).

On the basis of the framework and the understanding that has been advanced in the first part, the second part of the thesis represents a critical ethnography on fabricating the cost management and other systems in an Integrated Business System (IBS) environment, at BHP's Slab and Plate Products Division (BHP-SPPD - an Australian based company). Not only is such an ethnography concerned with the fabrication of CMS using the SAP commercial softwares, but also provides insights for understanding the emergence of such a change, that is, how new technological possibilities can persuade accounting knowledge in such a setting. It also provides an historical prelude with elaborations of various discursive conditions and events that might be seen as attempting or giving rise to the development and improvement of cost management and other systems at BHP-SPPD.

Key Words: Critical Accounting, Critical Theory, Actor-network or Translation Approach, Critical Ethnography, Fabrication of Cost Management Systems (CMS) and Integrated Business Systems (IBS), SAP System, BHP-SPPD.
Chapter One

Introduction

It is advised widely to write the introduction of a thesis after finish writing all the chapters of it.

Central to this research programme is the belief that embarking on a major study is dependent upon the way in which the researcher: (1) resolves the theoretical and epistemological disputes in 'the doing of research' (Chua 1988b) and (2) relates that to the analyses at the 'action-oriented' level - that is, at the level of empirical investigation. In fact, this belief grew out of the theories and silences that have been advanced in the 'critical accounting literature', which not only strive for more self-reflexive and contextualised critical accounting studies but also recognise the interconnections between society, history, organisations, accounting theory and practice (cf, Burchell et al 1980, Berry et al 1985, Hopwood 1979, 1983, 1989; Tomkins and Groves 1983, Laughlin 1987, 1988, 1991; Cooper 1981, 1983; Neimark and Tinker 1986, Chua 1986b, Preston 1986, Covaleski and Dirsmith 1988, Preston et al 1992).

It is also a belief that the roots of meaningful, yet uncertain, social and political consideration of the actual functioning of accounting are in organisations. As well, "(i)nstead of seeing accounting practices as functionally or dysfunctionally fitted to the organisations, they are viewed as reflexive constructions of the context of everyday activities of the members of the organisations at a specific time in the history" (Booth 1991, p1). Chua (1993, p7) argues that "(c)ritical accounting research has long embraced the notion that accounting is a constitutive social construction that emerges from and becomes entangled in complex structures, localised politics, multiple discourses and unintended happenings".

Hopwood (1979, p145) has bemoaned "how little we (accounting researchers) know about the actual functioning of accounting systems in organisations". This view has been supported by many critical accounting researchers (cf, Burchell et al 1980; Berry et al 1985, Cooper 1981, Laughlin 1987, Booth 1991). Similarly, Preston et al (1992, p563) argue that "(l)ittle is known about how accounting systems are created and
developed". As such, this research programme has been attempted to study the 'situated accounting practice' in an organisational context. In so doing, it assumes that the research strategies and the theoretical stance of the 'mainstream accounting research' (see Chua 1986), generally known as positivistic research, is of limited assistance in carrying out research on accounting within its everydays contexts. Rather, the alternative theoretical stance and strategies, generally known as critical studies in accounting research, are seen to have much to offer.

Having assumed the "positivist" epistemology is limited in researching accounting in a situated context, in chapter two, as a propaedeutical reflection, this study advances an alternative theoretical discourse which is concerned with understanding the problematic "knowledge claims" at the meta-theoretical level in the doing of critical accounting research. It examines the diversities of perspectives that have been advanced in the critical accounting literature. It then enters into a debate on a consideration of the concept of 'rationality and ideology' in critical accounting research. First, there is a brief account of the notions of rationality and ideology and their applicability at two distinct levels: the "meta-theoretical" level and the "action-orientation" level. Secondly, an account of socio-theoretical rationality in theorising accounting effects on economic and social life is undertaken. Finally, an apprehension of this socio-theoretical rationality is enhanced adopting the critical thought and theses of Jurgen Habermas.

A reason for adopting Habermas's (1973, 1978, 1984, 1987) critical thought at the epistemological level is that he has reconstructed and advanced a range of challenging theses on the subject of modern philosophy and social theory including the concept of rationality in conceptualising 'modernity' in Occidental capitalism and "the doing of research" (scientists' activities, social or otherwise). Not only has Habermas's inculcation silenced his predecessors such as Marx, Weber, Durkheim, Mead, Lukacs, Horkeimer, Adorno and Marcuse, but this also has provided a new dimension to the concept of rationality. For example, Habermas "believes that Weber and the other great theorists did not give an adequate analysis of rationalisation, and did not come to grips,
analytically, with the modern social pathology which he has called 'the colonisation of the lifeworld', mainly because they remain imprisoned within certain philosophical paradigms - the epistemology based on the Cartesian subject-object dichotomy which he [Habermas] calls 'the philosophy of consciousness' - and a concomitant narrow idea of rationality" (Brand 1987, p103).

By using Habermas's framework, it not only enhances the understanding of a broader concept of rationality, but it is also a step towards understanding the methodological roots and theoretical underpinnings that determine the choice of appropriate approaches of "the doing of research" on "accounting-in-action". Moreover, it is a belief of this researcher that such an adaptation has a propaedeutic value in apprehending both the rationality implications in theorising accounting effects on economic and social life, and the enhancement of understanding the methodological roots and theoretical underpinnings that determine choices of appropriate approaches for investigating differing contextual realities.¹

Besides addressing the concepts of 'rationality and ideology', chapter two also attempts to focus on a central research question at a very broad level for the study: what, how and why contemporary accounting practice has become purposive, is being used and is to be used, including the means of so doing at a micro-organisational level? Since the study is attempting to investigate "accounting-in-action" (more specifically accounting in an organisational context; in a quest for differing types of knowledge that may prevail in such a context) the final section of chapter two attempts to develop a skeletal model for an understanding of the nature of meta-level organisational 'culture' (in a Habermasian sense) and its transition processes.

¹ A reason why the consideration of a particular paradigmatic position can serve as a propaedeutic value is consistency. Instead of attempting to settle various riddles of a diverse range of perspectives that exist in critical accounting literature, entering a paradigmatic position to situate and enhance understanding of methodological concerns in critical accounting is deemed to be appropriate.
The ultimate concern of *chapter three* is in fact focused on making some sense of how Habermas's methodological corollaries (if any) can be intertwined with "methods" in carrying out research on "accounting-in-action". Having examined Habermas's methodological corollaries and their development by accounting researchers (cf, Laughlin 1987), an access to a micro organisation (ie, BHP-SPPD\(^2\)) is obtained in order to carrying out 'field work' on the cost management practice of the researched organisation.

It should be remembered that while elaborating Habermas's methodological corollaries and the central leitmotifs of his inculcation of "language processes" and "communicative model", it is found that such advocation cannot be equated with the "methodical discretion" that an individual researcher in accounting-in-action may face. This is because Habermas has neither specifically talked about accounting, nor provided any methodical structure of how to investigate a situated practice of accounting.

Nevertheless, by advancing the Habermasian notion of 'emancipatory knowledge interest' at the methodical level of an individual researcher, chapter three attempts to demonstrate that it is either to perform 'practical discourse' or 'pre-theoretical preparation' that a social scientist needs to collect a body of knowledge [both the "technical" (ie, "work systems", "purposive rational action", "machines", "inscriptions", etc) and "practical" (understanding communicative action and meanings)] through field study. Then, after gathering the "empirics" (both the technical and practical knowledge types), the final task of a social scientist is to represent them (empirics) to the public (including fellow colleagues) by way of an "emancipatory" discourse. This is what I will refer to as an emancipatory interest.

Moreover, Habermas's apprehension of a hypothesis that "the linguistification of the sacred can facilitate the rationalisation process of the lifeworld" has attracted this

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\(^2\) BHP stands for Broken Hill Propreitory Ltd and SPPD stands for Slab and Plate Products Division. SPPD is a major division of BHP which is a large multinational Australian company.
researcher to develop a methodological corollary of the study. To Habermas, this linguistification is not just a syntactic or semantic analysis, but an unveiling of the language-in-use in any real action situation (for instance, accounting-in-action). Moreover, another methodological corollary of Habermas's critical theory is the focus of studying "change" in contemporary practices. However, such methodological corollaries do not answer many questions. For example, there is no answer for what could be a 'way out' in regard to the 'methodical discretion' in carrying out, analysing and writing up (ie, mode of representation) of a field study? What could be the way in to a context? What context is to be investigated? What problems are to be looked at? Knowledge for what? Knowledge for whom?

In an endeavour to answer some of these riddles, in chapter four an attempt is made to develop an understanding, and make some sense of, the "methodical discretion" in researching accounting in a "situated practice" (Chua 1988). In order to enhance an understanding of some of these queries I have used a technoscientists' approach, especially that of Latour (1987) and his colleagues. One of the central issues I then deal with in chapter four by incorporating such an approach, is whether "methodological corollary" (leitmotifs of a perspective) is equivalent to "methodical discretion" (ie, rhetoric, tribulations, modes of representations, rules of methods for carrying out field work, interpretive flexibility). In particular, chapter four begins by questioning whether 'field study' can be used as a common banner in organisational research. It also questions whether there exist differences in the application and usage of the 'case study' method in accounting research; some are positivistic and others are not.

Chapter four, then, addresses 'ethnography' as a methodical discretion for field research. However, despite answering the various riddles of such a methodical discretion, it draws attention to some of the recent non-positivistic traditions of ethnographic writings and their theoretical approaches with special reference to the work of Latour (1987) and his colleagues, which investigates "science-in-action" and is known as "critical ethnography".
By considering some of the rhetoric of Latour's positioning tactics in conducting research on "science in the making" or "science-in-action" and his rules for the methods for so doing, a comparison is advocated by pinpointing how Latour's (1987) leitmotifs can be (dis)similar to my field work. This is followed by an account of the differing processes (methods) that are used in my 'field work'. Later sections of chapter four also detail how serendipity patterns of investigation have influenced this researcher (certainly, as a social constructivist) in re-constituting the research question(s) and hence, the thesis topic: "Fabricating Cost Management and Other Systems in a Mainframe Integrated Business Systems (IBS) Environment: A Critical Accounting Study". This is the research topic on which a critical ethnography has to be written by analysing the collected empirics on the fabrication of CMS (or otherwise), which are represented in the forthcoming chapters.

To be specific, my field work is finally centred (located) on the fabrication of the cost management system at SPPP. In order to carry out this fabrication of CMS, SPPP commissioned a project (that is, Phoenix 21 project) in 1991 which I call the "quasi-laboratory". By following Latour's (1987) appeals that 'we should study science-in-action but not the ready made science', it is the activities and the 'fact-building' processes of this quasi-laboratory that have been the specific subject of investigation by this researcher. In addition to the researched organisation, that is, BHP-SPPP, there are two other organisations that also have been involved in fabricating SPPP's CMS (at a later date Integrated Business System - IBS) using standard commercial software packages: the supplier of software modules, SAP International AG Ltd, a German based international commercial software developer and supplier and BHP's Information Technology (BHP-IT) (Port Kembla Regional branch), a service hand of the researched organisation which has been rendering services for developing and maintaining SPPP's information and computer technology.

Chapter five is comprised of a brief structural background to the three major organisations which have been engaged in the 'fact-building' processes through the
"quasi-laboratory" in developing and implementing cost management and other systems of the researched organisation.

Insights into the historical background can provide the impetus for understanding the emergence of change or as to why possibilities of change (such as new technological possibilities or so) emerge. This has been widely recognised by the critical accounting researcher (cf, Burchell et al 1985, Capps et al 1985, Laughlin 1987, 1991; Hopwood 1990; Cooper 1983, Preston et al 1992). Thus, before proceeding to my analysis and representation of a critical ethnography of the 'fact-building' processes (that is, fabricating and implementing new cost management and other systems at SPPP) through the quasi-laboratory, there is a need to provide an historical prelude, definitions and principles of the existing cost management systems (CMS) developments at SPPD. This has been carried out in chapter six.

There have been a number of discursive conditions and discrete events that might be seen as giving rise to the development and improvement of cost management practice at SPPP since 1978. However, the year 1978 is considered as a starting point for an historical analysis of SPPP's CMS because it is the time when SPPP for the first time moved into a computerised mainframe CMS with the introduction of the PISC (Pirect Integrated Standard Costing) system. Unlike the selection of a starting period, consideration of the exact cut-off period is difficult for two reasons. First, the existing systems are still in use at SPPP. Second, there have been various programs carried out in the late 1980s with a 'stop and start' syndrome. Tentatively, however, the period prior to the initiative of the implementation of new accounting and other technologies for internal data processing and management reporting through the quasi-laboratory (ie, the Phoenix 21 project), is considered as a cut-off period. That is, up to the time when the PA Consulting Group and SPPD in 1989 jointly carried out a study evaluating SPPD's existing costing systems and its concepts and principles. Theoretically, it is from that point of time that the initial "jolt/kick" for changing SPPD's old (internal data
processing) "technologies" emerged. It is the time when the initiative for the formation of the quasi-laboratory at SPPP also began.

The organisation of chapter six is as follows. The first section will begin the discussion by examining SPPP's understanding of CMS. The following sections will elaborate on the historical background of the existing CMS development, both in terms of systems and the various programs and principles, at SPPP since 1978 but prior to the initiative of the formation of the "quasi-laboratory". Finally, chapter six addresses various initiatives in terms of systems development, programs and projects by SPPP and its corporate BHP-Steel group in order to improve their CMS practice.

My narratives on the fact-building processes of fabricating the CMS and other systems at SPPP via the quasi-laboratory begin in chapter seven. It commences by examining the processes and events prior to and including the formation of the quasi-laboratory. The later sections of chapter seven will address the initial fabrication processes of the quasi-laboratory which have attempted a trial for implementation of a stand-alone CMS using the SAP system. What are the multiple happenings? Why and how have they occurred? The final section of the chapter will address what has happened to the fact-building processes of the stand-alone CMS development?

Chapter eight looks at why the emphasis has been shifted to developing integrated business system (IBS) rather than a stand alone CMS. Overall, the chapter will address a range of questions and multiple happenings of fabricating SPPP's IBS development using the SAP system. For example, why had the emphasis shifted to develop an IBS rather than a stand-alone CMS? How did the fact-building tasks, including accounting, persuade? What are the struggles of such a fabrication? Why had such fact-building processes taken such a long time? What are the consequences of such fabrication? What impacts does such fabrication have on the future roles of (management) accountants (or otherwise) within the researched organisation? What are the possible communicative (behavioural) implications of the various occupational groups (the users of the integrated system) sharing and managing information under the proposed system
implementation at the researched organisation? What constraints did the fact-builders face to build, implement and deploy the technology (the SAP system)? How did SPPD reshape (customise) the technology? How can the technology (the proposed integrated CMS) shape and influence the "lifeworld" at SPPD? More specifically the ethnography of chapter eight will display some of stories and rehtorics of both the "machinations and inscriptions" (Latour 1987) and the change management issues involved in such fabrication.

Finally, chapter nine provides conclusions and theoretical reflections to the thesis. The organisation of the chapter is divided into four sections. The first section highlights how the preparation for 'the journey' in this thesis was carried out using a critical accounting literature. The second section establishes a 'critical ethnography' as a travelling companion for accounting-in-action researchers. The third section will display the major findings of 'the journey'. The final section concludes 'the journey'. 
Chapter Two
Situating the Theoretical Stance: A Propaedeutical Reflection

2.1 Introduction

This is a propaedeutic chapter concerned with understanding the problematic "knowledge claim" in the "doing of research" (Chua 1988b) on "accounting-in-action" (Tomkins and Groves 1983) and situating the theoretical stance of the study. This research programme assumes that the research strategies and the theoretical stance of the 'mainstream accounting research' (see Chua 1986), generally known as positivistic research, is limited in carrying out research on 'accounting-in-action'. On the other hand, the alternative theoretical stance and strategies, generally known as critical studies in accounting research, are seen to have much to offer.

This alternative stance of theories and strategies in accounting research are more recent, as well as diverse and growing. This chapter, therefore, initiates a debate on the nature of the critical accounting movement and then considers several aspects of locating the theoretical stance and developing a framework for this research programme. It examines some inner contradictions in the philosophical assumptions, the problematic "knowledge claim" and diversities of perspectives that have been advanced in the critical accounting literature.

The chapter then enters into a debate on the consideration of the concept of 'rationality and ideology' in (critical) accounting research. In so doing, it draws on, first, a brief account of the notion of rationality and ideology and its applicability at two distinct levels: the "meta-theoretical" level and the "action-orientation" level. Secondly, it draws on an account of socio-theoretical rationality in theorising accounting effects on economic and social life. Finally, an apprehension of this socio-theoretical rationality is enhanced adopting the critical thoughts of Jurgen Habermas.

A reason for adopting Habermas's critical thought is that as a leader of the 'Frankfurt
School', he has reconstructed and advanced a range of challenging theses on the subject of modern philosophy and social theory including the concept of rationality in conceptualising 'modernity' in Occidental capitalism and "the doing of research" (scientists' activities, social or otherwise) that extends well beyond his predecessors such as Marx, Weber, Durkheim, Mead, Lukacs, Horkeimer, Adorno and Marcuse. Habermas provides a new dimension to the concept of rationality that is used here in developing a framework for the study. Such an adaptation is not only to be considered an enhancement in understanding a broader concept of rationality, but also a step towards understanding the methodological roots and theoretical underpinnings that determine the choice of appropriate approaches to "the doing of research" on "accounting-in-action".

Through an elaboration of the concept of 'rationality and ideology' the chapter attempts to focus on a central research question at a very broad level for the study: what, how and why contemporary accounting practice has become purposive, is being used and is to be used (including the means of so doing at a micro-organisational level).

As indicated in the previous chapter, this study is investigating "accounting-in-action", more specifically accounting in an organisational context. Thus, in a quest for differing types of knowledge that may prevail in such a context, the final section of the chapter will attempt to develop a skeletal model in order to understand the nature of meta-level organisational 'culture' (in a Habermasian sense) and its transition processes.

2.2 The Critical Accounting Movement

There are many labels for 'critical accounting'. For example, MacIntosh (1988) has advanced the label 'critical accounting movement'; other labels have included 'critical accounting' (Cooper & Hopper, 1990), 'critical accounting literature' (Neimark and Tinker, 1986), and 'critical studies' (Cooper and Hopper 1987; Laughlin, Hopper and Miller 1989). Laughlin (1987) uses the term 'critical theory' to mean 'critical social theory', especially German critical theory. Some others also use the term 'critical theory' to mean French
critical theory.

These terminological differences may mean different things to different accounting theorists and researchers. If the expression 'critical studies' is used in accounting as the general nomenclature of this research school, it is possible to question the ultimate concern of 'critical studies' in accounting. In this regard, apart from the primary objective which is to challenge 'positivist' epistemology, Cooper and Hopper (1987, p411) argue that it is a concern with accessing the significance of accounting as a set of everyday practices and as a series of theoretical discourses central to studies in accounting. A second concern is that "critical studies in accounting (are) frequently concerned to explicate a theory of interests in understanding accounting practice and theory" (p411). This is supported by Laughlin, Hopper and Miller (1989, p4), who argue that the notion of critical studies has taken such a form in order "to identify and document the role that sectional interests play in accounting". In an introduction to an anthology of 'critical papers' Cooper & Hopper state that "critical accounting arose both as an expression of attempts by scholars within accounting to apply fresh, typically nonfunctionalist, theoretical insights into the effects of accounting within organisations and society" (1990, p1).

Since the early 1980s the critical accounting literature has advanced using a diverse range of expressions as to the theoretical underpinning necessary for understanding and relating accounting theory to practice. One of the main features of this tradition has been that 'theoretical considerations have loomed large' in developing accounting theory, characterised by a theoretical openness and an awareness of developments in other relevant disciplines (Hopwood and Bromwich 1984, p150). Cooper and Hopper state that "critical accounting is critical of conventional accounting theory and practice and, through critical social science theory, it seeks to explain how the current state of accounting has come about" (1990, p2). One of the main foci of the critical accounting movement is that it has been calling and striving for a more self-reflexive and contextualised accounting literature as
well as recognising the interconnections between society, history, organisations, accounting theory and practice, to an extent not previously contemplated.1

Critical studies in accounting call for a practical (pragmatic) understanding of the actual functioning of accounting in organisations and especially attempt to find linkages with its social implications. This critical accounting movement has emerged as accounting researchers have begun to challenge the 'positivistic' notion of theory testing in accounting. More generally, it emerged when accounting researchers began to systematically question the soundness of the philosophical assumptions that underlie 'mainstream accounting research' (cf Gaffikin 1984, Chua 1986). A reason for this challenge is that positivists' mathematical models are limited to a few variables and statistical tests, constrained by the available data, and fail to understand 'accounting in action' and the links between accounting theory and practice. Thus, it is not surprising that accounting researchers have come to realise 'how little we know about the actual functioning of accounting systems in organisations' (Hopwood 1979, p145).

It is widely accepted that accounting has no special connotation without the existence of organisations. In other words, neither accounting nor organisation has a significant independent existence; rather, they are symbiotic and this also has social ramifications (cf Hopwood 1978, 1983, 1984, 1985, 1986; Burchell et al, 1980; Neimark and Tinker 1986, Cooper and Hopper 1987; Amstrong 1987, 1991; Laughlin 1987, 1991; Booth 1991, Preston et al, 1992). However, many actors other than accountants play a significant role within an organisation (Chua and Degeling 1989) and, in a broader sense, within society. Consequently, it is evident that the information that is produced by accountants cannot be viewed as value-free or neutral. This suggests that neither accounting nor organisations can

be isolated from the social contexts in which they exist (Hopwood 1983). Thus, the traditional view that accounting is no more than a technical phenomenon (in a positivistic sense) is being resisted. It is argued instead that accounting has wider social ramifications. In this sense, it becomes necessary in the accounting research arena to consider a broader framework that should ultimately provide a richer methodological guide-line in enhancing our understanding of how accounting works in practice. This necessity has led accounting researchers to advocate a more diverse range of theoretical and practical issues during the last decade or so, and this is known as the 'critical accounting movement'. The research carried out in this tradition is generally known as 'critical studies' in accounting.

2.2.1 Diversities in Approaches

There is a recognition among the critical accounting researchers that an understanding of the significance of accounting and its development requires an examination of its social context. In endeavours to examine such a context, some critical accounting researchers have explored various fields of the social sciences, including the sociology of knowledge and philosophy of science. In so doing, a diverse range of theoretical and methodological underpinnings has been brought into the accounting research arena in order to investigate how accounting is related to society, politics and organisational functioning. However, it also becomes apparent that there is an incoherence regarding the 'state of knowledge claim' (ie, the methodological issues). In other words, although there is common agreement among them (ie, critical accounting researchers) in their rejection of 'functionalist' thinking (Burrell and Morgan, 1979), according to Laughlin and Lowe (1990, p35), "it would be wrong to see the alternative approaches which they advance as some homogeneous set". A wide range of alternative theoretical approaches has been advanced and examined in order to enhance understanding and a summary is given below:

(b) those who rely on political economic (including Marxian) approaches (Cooper 1980, Tinker 1980, Cooper & Sherer 1984, Neimark & Tinker 1986, Willmot 1986, Armstrong 1987, Hopper et al., 1987);


(d) those who utilise the Foucauldian approach (Burchell et al. 1985, Hopwood 1987, Loft 1985, Miller & O'Leary 1987, Hoskin & Macve 1988, Hopper et al. 1990);

(e) those who utilise Giddens's structuration theory (Roberts and Scapens 1985, Capps et al. 1989, Chew 1992);

(f) those who utilise Gramsci's concept of hegemony (Lehman & Tinker 1985, Richardson 1987);

(g) those informed by the thinking of Derrida's deconstructionism (Tinker & Neimark 1987, Arrington & Francis 1989, MacIntosh 1990b);

(h) those who are claiming to be social constructionists (Chua 1986b, 1988, 1993; Hines 1988, Preston et al., 1992);


(j) those who propound the merits of technoscientists' approaches such as actor-network theory in studying 'accounting-in-action' (Robson 1991, 1992; Preston et al., 1992; Chua 1993)

Although there exist dissimilarities among these diverse perspectives, a common feature amongst the authors of this tradition is that they share a common feeling for accounting research in that it needs to be considered within a broader societal context, and that the development of theory needs to be considered open and refutable. Mainstream
'positivists' rarely accept such an evaluation, which amounts to 'criticism(s) of their own tradition' (Chua 1986, p626). Schutz (1973, p130) refers to them (positivists) as belonging to an unquestioned tradition. Gaffikin (1989) argues that research of the positivist's tradition is commonly advanced as a 'paradigm knowledge-yielding enterprise'. It is sometimes argued that research from the positivist perspective is seeking answers only to the research questions the researchers construct. In general, the performance of answers is judged on the basis of the generality of theory from complex issues into a traceable representation, and this is the basis of acceptance of a particular research endeavour (Chowdhury 1986).

The central theme of this chapter, as mentioned earlier, is not to provide an exclusive coverage of the critiques of 'positivism' in accounting research as that has been covered in several papers in the critical accounting tradition and elsewhere (cf. Lowe, Puxty and Laughlin 1983, Chua 1986, Sterling 1990, Gaffikin 1987, 1988, 1989; Hunt and Hogler 1988). Rather, attention is drawn to situating the theoretical stance and developing a framework of the study as well as to enhance understanding of the critical accounting movement and its thrust towards understanding the problematic 'knowledge claim'.

So far, the detail of each individual perspective, as has been indicated above, is neither discussed nor the agency been assumed. Nor can it be assumed that these perspectives offer

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2 In a strict sense, those who utilize the 'empirical-analytic' method, which is analogous with the experimental modality of natural sciences, in the social sciences are generally considered as 'positivists' (and/or logical positivists). To say 'empirical-analytic' method we strictly mean by empirical modelling, a situation for testing theory, i.e., which has been used as instrument for behavioural analyses or cognitive enquiry, what Burrell and Morgan (1979) classified as 'functionalists'. According to Suppe (1977), a central characteristic activity of such a positivists' method is "the use of reason in the suggestion and development of hypotheses and theories and evaluating the knowledge claims by those who advance such hypotheses and theories" (p.650). For example, in accounting those who have used, to name a few, the positivists' ontology and epistemology, which attempted 'to discover a knowable and objective reality' (Chua 1986), are: (1) contingency theory (see Khandwalla 1972, Burns and Waterhouse 1975, Hayes 1977, Daft and MacIntosh 1978, Kenis 1979, Merchant 1981, Brownell 1981, Gordon and Narayanan 1984, Govindarajan 1984, Jones 1985, Brownell and Maclernes 1986, Hirst 1983, Teoh and Lam 1989, Mia 1989); (2) multi-cue probability learning theories (see Hoskins 1983, Kessler and Ashton 1981, Harrell 1977, Libby 1975); (3) efficient capital markets research (see Gonedes 1974, Beaver and Dukes 1973, Fama 1970, Ball and Brown 1968); and (4) agency theory (see Baiman 1982, Zimmerman 1979, Demski and Feltham 1978).
the same conclusions. Some may argue that these diversities have created dysfunctions in the accounting research arena. That is, they result in incoherence and diversity about the 'knowledge claim', especially to those who argue against the view that accounting research is a 'multi-paradigm' discipline [cf, Cooper 1983, Hopper and Powell (1985) who followed Burrell and Morgan (1979)].³ This argument has also been favoured by Chua (1986). Chua argues that differentiating accounting research as "multi-paradigm" or having a "mutually exclusive" perspective creates a deficiency in accounting theorising. Instead, Chua (1986, p603) goes on to argue that different "world views" should be classified "with reference to (the) underlying (philosophical) assumptions about knowledge, the empirical phenomena under study, and the relationship between theory and the practical world of human affairs". By developing such a classification of assumptions she divides 'mainstream accounting thought' into groups with two alternate world-views, such as interpretive and critical. With such an appreciation, she argues, a tradition of rich research insight would emerge.

A different view has been posited by Laughlin and Lowe (1990) who argue that "despite the view of people like Giddens and Foucault, whose ideas have been adopted by some of the new wave of accounting thinkers, who maintain that the opposites can be held in dynamic balance making the choice unnecessary and counterproductive, we (Laughlin and Lowe) would maintain that the key dimensions highlighted in the Burrell and Morgan's framework are mutually exclusive, where choices are necessary in the formulation of any approach to research into accounting systems design" (p36). Laughlin and Lowe (1990) go on to argue that the different perspectives are, somehow or other, well suited to the three categories of Burrell and Morgan's (1979) classification of social theories with the exception of the 'functionalist' paradigm. For reference, Burrell and Morgan's (1979) representation of the four paradigms of social theory is reproduced in Figure 2.1. Laughlin

³ Obviously such dysfunctions are not only a common characteristic in accounting but also a common feature of most disciplines in social sciences.
and Lowe (1990) further argue that critical accounting researchers have a common understanding that field study in accounting is emergent and also recognise the need for the rejection of the 'functionalist' paradigm.

Figure 2.1 *The Four Paradigms of Social Theory from Burrell and Morgan (1979)*

<table>
<thead>
<tr>
<th>The Sociology Of Radical Change</th>
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<tbody>
<tr>
<td>Radical Humanist</td>
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<td>Subjective</td>
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<tr>
<td>Radical Structuralist</td>
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<td>Objective</td>
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<td>Interpretive</td>
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<td>The Sociology Of Regulation</td>
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</tbody>
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It is Laughlin and Lowe (1990) who claim that this choice of perspective is necessary but they do not then clarify why it may be so. Therefore, in order to clarify further - that is, whether the 'choice of perspective is necessary or not' - the following explanation is suggested. If it is assumed that the above perspectives (a through j above) can explain a particular phenomenon or object domain (x) with the same expected achievable results then, logically, any choice is unnecessary for it is expected that the same results can be achieved irrespective of the perspective chosen. Thus, despite their theoretical differences, it does not matter which perspective is chosen. However, if it is assumed that different realities (say k to t) are respectively suitable for corresponding to (a through j) perspectives, then a 'choice is necessary'. Or, it can be argued that if any perspective can better explain all the realities or is suitable for explaining diverse realities (accounting), one may choose such a perspective (which is yet to be discovered in the critical accounting research arena!). These arguments for perspective choice may prove insoluble for the question (if asked): Why do
so many different perspectives exist? Rather, they show that as yet there is insufficient knowledge to support any particular approach as superior for investigating the phenomena to be researched. However, it is a realisation that each of these competing approaches holds certain value based assumptions, beliefs, forms of rationality, epistemic and ideological strands in "the doing of research" (Chua 1988b), which set respective framework(s) and criterion for investigating a particular phenomenon. Furthermore, it is not suggested that all perspectives are equally satisfactory or arbitrary, and depend on differing features of the phenomenon (phenomena) to be investigated.

It also appears that within critical accounting research, above all, tackling issues that are concerned with 'rationality' and 'ideology' in 'the doing of research' is an important methodological concern. This is because the consideration of rationality and ideology, though inseparable, results in a particular perspective becoming different from its competing perspectives. Thus, before outlining the phenomenon to be investigated, it would be appropriate to enter into a debate about how the concept of rationality and ideology can be related to 'the doing of research', as well as in understanding the "purposefulness" of accounting and theorising its (accounting) effects in a wider social context. Any debate on 'rationality' and 'ideology' may have paradoxical features and can be intrinsically fascinating. Although they may prove ultimately incapable of providing any immediate solution, insights into the origin of such a paradox concerning rationality and ideology can be valuable in developing a framework and unveiling the problematic [the research question(s)] of the study as well as being a valuable part of self-reflective knowledge.

2.3 An Understanding of the concepts of "Rationality" and "Ideology" in "the Doing of Research"

Like 'value', 'culture' and 'art', the notion of 'rationality' is an extremely difficult concept to define with any precision. Implicitly, one way or the other, it is through the discourse of rationality that critical accounting researchers not only advanced the emerging competing approaches (as has been indicated above) in accounting but also provided undeniable
silences and critics over the disillusion of the positivistic notion of the taken-for-granted 'science'.

In every science, spheres of life, actions, organisations, economy, etc, the consideration of 'rationality' is a central and fundamental issue. Not only do sciences use the rationality concept to validate their own standards but also differing 'spheres of life' use various forms of rationalities in order to justify the doing of any action.

The positivistic school views 'rationality', among other "things", as being 'taken-for-granted', 'objective' rather than 'subjective', 'the only way', 'absolute', 'orderly' reasoning, which is used interchangeably and synonymously with the notion of 'science' and is advanced by the natural sciences in general. Arguably, on the other hand, critical accounting researchers might suggest that the rationality of 'the doing of research' in accounting can be classified, interpreted and understood only in relation to a particular context by choosing a particular perspective or 'world view' that is based on certain value-based assumptions about "ontology", "epistemology", "methodology", and the purpose of research (Chua 1986, 1988b; Hopper and Powell, 1985). A reason for this is that any perspective rests on assumptions about the world in which we live which are ultimately metaphysical, and incapable of being proved corrigible. Thus, it is not a surprise when some critical accounting researchers argue that there exist 'multiple rationalities' in 'the doing of research' and relate that to 'the doing of accounting' [or "science in the making" (cf. Latour 1987)].

For example, at a broader level, an accounting researcher can ask: what, how and why accounting rationale has become purposive, is being used, is to be used, and what are the means for doing so in a particular context? However, it is only 'the doing of research' which is the consideration of attention in this chapter - that is, how arguments on rationality of 'the doing of research' in situating the theoretical stance and outlining the research question(s) of the study can be spelled out. Of course, this is not to deny that 'the doing of research' can be
done in isolation from 'the doing of accounting' or 'accounting practice'. In 'the doing of research' the consideration of rationality and ideology in locating the theoretical stance, which in effect results in a particular way of theorising accounting effects on economic and social life, is an important issue. It is this consideration of 'theory-ladenness' which has become an important aspect in 'the doing of research' within the critical studies in accounting. That is, critical accounting researchers [with the exception of those who believe in just the pure 'interpretive perspective', in the terminology of Burrell and Morgan (1979)] believe that 'theory looms large' in relating accounting to a broader social, economic and cultural context. As well, the doing of research, in such contexts, needs conceptualising at a broader level of ideology and rationality.

From a different perspective, however, Sheppard and Johnston argued that

Part of the claim for the superior rationality of science depends upon the way in which theoretical disputes are allegedly resolved within it. Theoretical disputes are supposedly solved in a decisive and authoritative way by reference to an unproblematic core of experimental observations. For such an account to be valid three basic requirements have to be satisfied - firstly, the categories of 'observation' and 'theory' have to be analytically distinct, such that an explanation of the former excludes any reference to the latter. Secondly, the category of 'observation' must be prior to and independent of 'theory'. Thirdly, 'theory' must be shown to be dependent upon and follow from 'observation'. All these requirements must be met to ensure the cognitive sovereignty of experience. (1975, pp9-10)

After advancing these above three requirements in relating observations to the concept of theory-ladenness, Sheppard and Johnston questioned "How are these three requirements related? The empiricist assumption is that theories are man-made and hence capable of error whereas observation gives direct access to reality. What changes would be necessary if the assumption was reversed?" (p10) In response, they contended that

..our beliefs about the nature appear to be derived via theories rather than inferred directly from sense-experience; in opposition to the empiricists account, .. theories organise experience into meaningful and significant items. Our understanding of the natural world is necessarily and inevitably mediated by concepts; concepts allow us to make sense of the flux of experience by selecting and making connections between 'bits of experience' from the
inchoate mass which constitute pre-conceptual perception. (p10)

Sheppard and Johnston claim this a reason for this is that "the 'pure' data of empiricism are neither pure nor data. Experience loses its claim to cognitive sovereignty because it can no longer be considered as either prior to or independent of theoretical structures." (p10)

The debate on the issue of 'rationality' has been long winded and becomes a 'way of life' in the history of Occidental philosophy. Many forms of discussions on this issue are possible. Here, instead of entering into the debate of 'rationalist' on the issue of 'rationality' more rigorously, an attempt is made to pinpoint the necessity and applicability of rationality aspects at two levels: meta-theoretical (epistemological) level and action-orientation theoretical level. By rationality at the action-orientation theoretical level, I mean the rationale and theories about certain micro-aspects, that is, aspects of 'the doing of accounting' or 'accounting in action'. Consider a few examples such as the theory of cost allocations (cf Wells 1978, Thomas 1969, 1974; Edwards 1952, Baxter 1952, Coase 1952, Horngren 1982, Ahmed and Scapens 1991), theories of 'working life' in industrial organisations (cf Alvesson 1987), and the theory of cost management system development (Millar 1992), etc. In general, these 'management theories' [rather than just the theories of 'organisation behaviour' - see Puxty and Chua (1989) for such a differentiation] are action-oriented theories.

At this action-orientation level, the researcher's questions would be, at least in regard to the general question of whether particular action is rational or meaningful: (i) given what the agent believes, is a certain action reasonable and (ii) are the beliefs on which the agent is acting reasonable? It is the second question that involves epistemological (meta-theoretical) issues and leads to a debate on the consideration of rationality and ideology in 'the doing of research', including theorising accounting effects on economic and social life.

Although there has been dissension concerning a meaningful separation, at least

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theoretically, between what are rational and what are ideological explanations (see Jones 1992), in retrospect can we avoid the meta-theoretical concerns of these issues from 'the doing of research' and relating that to the action-theoretical levels? An understanding is that it is the beliefs about rationality and ideology at the meta-theoretical (epistemological) level which directs the making up of a particular 'world view'; the rationale which researchers use (hold) in understanding paradigmatical assumptions about such aspects as human nature, ontology, science and society. Puxty and Chua argued that:

Beliefs about rationality and ideology underpin the theory and practice of management control [action-orientation theory]. They underlie the ways in which theoreticians express beliefs both about normative control strategies and positive control procedures. They underlie the ways in which managers take action - since action must be founded on beliefs, which in turn, being value-laden, are expressions of the value sets which those management accept. (1989, pp116-117)

Whether the researcher can distinguish between the concept of rationality and ideology in any meaningful way or not (cf Jones 1992), he/she always acts (doing research) based on certain ideological strands - rational or irrational - where ideology can be referred to as sets of assumptions, forms of thoughts, and values that are placed and offered by a particular paradigmatic position. Held argues,

Ideologies are not however, merely illusions. They are embedded and manifested in social relations. The ahistorical and asocial character of certain kinds of interpretation of social life may itself be a reflection of the transformation of social relations into impersonal and reified forms. Ideologies can express 'modes of existence'. Therefore, ideologies are often packages of symbols, ideas, images and theories through which people [researcher or agents] experience their relation to each other and the world. (1980, p186)

Like rationality, many forms of discussions on the concept of ideology can be made possible. For example, if we look at the positivistic and conventional notion of ideology in both 'the doing of research' and conceptualising different forms of rationality in Occidental capitalism, we can see that it is limited, single dimensional, bounded and confined in many regards (see Alvesson 1987, pp143-218). By contrast, for example, if we look at the aim of
critical theory which not only places ideology as 'forms of thought' but also tries "to study how social conditions (primarily under the late capitalism), forms of rationality and needs, as well as to what extent and in what way the rational considerations of individuals with regard to needs, the satisfaction of needs and liberation from "unnecessary" repression are disturbed by social conditions" (Alvesson 1987, p150). However, it should be mentioned that it is not an intention here to enter into the debate on the various forms of ideological issues. Rather, the realisation is that understanding the issues on "rationality" and "ideology" at two differing levels (as has been indicated above) - meta-theoretical (ideological) level and 'action-theoretical level - is necessary, at least, for both the development of a framework in studying "accounting-in-action" and conceptualising the rationality considerations of these levels.

2.4 Socio-Theoretical Rationality and Accounting Theorising

A consideration of the notion of socio-theoretical 'rationality' in theorising accounting effects on economic and social life is a recent phenomenon. Although it has a long history in the German tradition of critical social theory [cf Weber 1958, Marcuse 1978, Habermas (1971, 1974, 1978, 1984, 1987, 1987b)], it has only very recently appeared in accounting research. Such an eclecticism has helped accounting researchers to question the conventional wisdom and theories of the discipline. For example, a realisation has occurred concerning the manner in which in traditional accounting research the question of 'rationality' is one-sided, where "society is seen as being comprised of independent, freely contracting individuals, whose initial endowments are irrelevant to the contracted outcomes, and conflict is viewed individualistically, asocially and as an equilibrating process" (Neimark and Tinker 1986, p369). Such a traditional view has ignored the social and historical origins of the structural relations and institutional forms of human society that characterise contemporary capitalism (Neimark and Tinker 1986). In other words, it ignores the socio-historical perspective.
Neimark and Tinker (1986) explain how the traditional accounting theories have undermined the potentiality of incorporating the socio-historic elements that need much attention for explaining Occidental modernisation. They base their analysis on Marx's account of modernisation. Although Neimark and Tinker (1986) base their analysis on Marx's account, their strong criticism of orthodox (traditional) research can be taken as a basis for further understanding of how the rationality debate can be related and expanded in understanding the rationalisation processes including understanding the 'purposefulness' (Booth 1991) and uses of accounting in a broader societal context, as well as scientists activities (the doing of research).

Neimark and Tinker's (1986) discussion in fact is centred on uncovering the limitations of the conventional models of management control systems (MCS) over the social construction of MCS, where management accounting systems (MAS) are part of the former. They identify six major limitations of the traditional theories (such as transaction cost theories, contingency theories, agency theories and the inducement contribution model) that dealt with elaborating 'management control systems'. The limitations put forward by Neimark and Tinker (1986, pp 370-77), are: (i) the 'traditional theories' do not consider the socio-historical perspective; (ii) these theories frequently ignore socially deserving processes of feedback mechanisms; (iii) they fail to acknowledge the extent to which the organisation is part of and constitutes its environment, as well as the extent to which the environment permeates the organisation's internal structure and social relations. In other words, these theories view the organisation and its environment as separate entities; (iv) the environment is incompletely articulated, for example (a) individuals are viewed as atomistic beings not belonging to a structure of social relations, that is, part of the wider society, (b) social conflict is seen as an equilibrating process that takes the form of market competition, (c) neglects the possibility of fair exchanges which may have inevitable features, (d) the reliance on marginalist economics; (v) they undermine the performance as non-problematic
- implicitly it is assumed "what is good for the capitalist is good for the worker, the local community and nation", and they thereby ignore the social costs imposed on society by corporate innovations; and finally, (vi) the orthodox models are grounded in a "positivistic epistemology which itself understated the social status of their theories".

Booth (1991, p22) by adopting a critical structuralist perspective contended that "human rationality cannot be tightly defined as the traditional notion of logical decision making, rather multiple forms of rationality exist. Rationality should be more broadly viewed as socially constructed meaning systems which provide sets of rules for meaningful action". Within the critical accounting research there is a widespread recognition that the traditional notion of rationality is limited in conducting self-reflexive and contextualised accounting research, which neither recognises the interrelationship between society, accounting theory and practice nor takes inter-organisational and social conflict into account.5

Many forms of positions are offered by the critical accounting researchers in relating 'rationality' and 'ideologies' at these two levels - the meta-theoretical and the action-orientation levels.6 For example, Laughlin (1984, 1987, 1991) used Habermasian critical approach in relating meta-theoretical 'rationality and ideology' to action-theoretical levels (micro-organisational theoretical level). In a recent study, Jones (1992) used Weber's notion of rationality at the meta-theoretical level; and at the action-theoretical level, his investigation topic was an investment appraisal theory and its role in investment decision processes in a particular context. Arrington and Puxty (1991) put forward a discourse on the concept of rationality and its relation to theorising accounting as an interested action.


6 See the divergent perspectives as advanced in section 2.2.1 for such positions - though the details of how each of these perspectives can be related to these two levels, ie, meta-theoretical and action-orientation theoretical levels, have not been apprehended.
They used Habermas's critical thoughts to relate accounting theory and practice, though they cast doubt on Habermas's critical approach and its profound implications for 'action-theoretical level' of analysis. Despite this doubt, however, in the following attention is drawn to Habermas's critical thought (as promised earlier) in respect to how his apprehension of meta-theoretical concerns can be considered potentially (or otherwise) useful in "the doing of research" and understanding the rationalisation processes in Occidental capitalism.

2.5 Habermas and Socio-Theoretical Rationality

Jurgen Habermas is a contemporary philosopher and sociologist and Professor of Philosophy at the University of Frankfurt, Germany. During the last two decades or so, he has advanced a diverse range of challenging theses regarding various aspects of modern philosophy and social theory.

Regarding the concept of rationality, there is a view that Habermas advanced a far broader concept of rationality than his predecessors (Brand 1987). Brand argues that Habermas believes that Weber and the other great theorists did not give an adequate analysis of rationalisation, and did not come to grips, analytically, with the modern social pathology which he has called *the colonisation of the lifeworld* [Italics are mine], mainly because they remained imprisoned within certain philosophical paradigm - the epistemology based on the Cartesian subject-object dichotomy which he [Habermas] calls the *Philosophy of Consciousness* [Italics are mine] - and a concomitant narrow idea of rationality. (1987, p103)

To Habermas, any theory that claims to be a theory of society (in a *sociological* sense) will encounter the problem of employing a concept of rationality, which always has a normative content at three levels (Habermas 1984). These levels, Habermas (1984, px1) argues, "can avoid neither the metatheoretical question concerning the rationality implications of its (sociology) guiding concepts of action nor the methodological question concerning the rationality implications of gaining access to its object domain through an understanding of meaning; nor, finally, can it avoid the empirical-theoretical question
concerning the sense, if any, in which the modernisation of societies can be described as rationalization".

Habermas has advanced his theses through a consideration of a diverse range of issues. However, a central theme in Habermas's work is the thesis that a societal development, be it from either a broad societal or a micro organisational viewpoint, is traceable to the increasing linguistic skills of the societal participants. It is through developing these discursive skills, Habermas maintains, that "society has progressed from the mythical through to the modern" (Broadbent et al., 1991). The process of increasing such a skill, according to Habermas, has an evolutionary effect. In other words, it is through developing such skills that social actions of any kind can be either implemented or understood in an organisational and societal context, but not with the strong metaphorical understanding of, what Habermas calls, 'scientism' (ie, objective and panoptic view of science).

Another appreciation of Habermas's thesis lies in the theme that his theory of communicative action is not a metatheory, but rather what he sees as "the beginning of a social theory that is concerned to validate its own standards". Habermas accomplishes this by shifting his attention to the paradigm of language, that is, not as a 'syntactic' or 'semantic' analysis, but as 'language-in-use or speech'. This latter concept, that is, language-in-use or speech, according to Habermas, can be used for 'comprehensibility', 'truth', 'rightness', and 'sincerity' rather than as a tool for creating universal validity claims.

In particular, Habermas develops these concepts in his two volume work *The Theory of Communicative Action* (as translated by McCarthy in 1984 and 1987 respectively). The titles are indicative of the focus of each volume; the first is subtitled *The Reason and Rationalism of Society*, the second, *System and Lifeworld: A Critique of Functionalist Reason*. Throughout these volumes, one of Habermas's principal preoccupations is seen in

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7 Further consideration of this occurs in chapter three in an elaboration of the methodological positions of Habermas.
the form of a question, namely, "whether and in what respects modernisation of western
capitalism can be viewed as rationalisation". Assessment of 'modernity' is one of the pivotal
considerations that has been central in much of Habermas's later work. For him, "the real
challenge lies in conceptualizing 'modernity' in a way which neither overlaps its costs, nor
uncritically celebrates it in the way that mainstream social science has advanced" (White
1990, p91). [Habermas's humanist thinking, in the terminology of Burrell and Morgan
(1979), is a call for a 'just and free life' - a far reaching goal). This viewpoint has
dominated concepts and theory formation not only in modern sociology but also in the
related fields of social sciences including the critical accounting literature.

Through sustaining a continuous line of thought, Habermas demonstrates, in the above
volumes, three interrelated concerns which he considers theoretical reconstructions of the
ideas of 'classical' social theorists (eg Marx, Weber, Durkheim, Mead, Lukacs, Horkeimer,
Adorno, and Parsons) on the subject of 'communicative action' and 'modernity'. These
concerns are neatly summarised by McCarthy [1984, pvi] as:

1. to develop a concept of rationality that is no longer tied to, and limited
   by, the subjectivistic and individualistic premises of modern philosophy
   and social theory;
2. to develop a two-level concept of society that integrates the lifeworld
   and system paradigms; and
3. to sketch out, against this background, a critical theory of modernity
   which analyzes and accounts for its pathologies in a way that suggests a
   redirection rather than an abandonment of the project of enlightenment.

As has been indicated earlier, Habermas has advanced his theses through a
consideration of a diverse range of issues. However, of major interest here is to look at
whether Habermas's employment of critical theses in reconstructing his predecessors'
theories on the subject of communicative rationality, modernity and social theory can
provide adequate understanding of Occidental capitalism as well as reflect the consideration
of rationality issues in 'the doing of social science research'. The following sections
concentrate on addressing these aspects.
2.5.1 Rationality, Communicative Action and Modernity

Throughout the two volume work entitled *The Theory of Communicative Action* Habermas advanced his theory of communicative action. Brand (1987) argues that it is an important theoretical achievement in that it advances, on the one hand, an intricate theory of social evolution and, on the other, an analysis of modern 'social pathology', which can be seen as a superior account in understanding Occidental rationalisation. Reconsidering his predecessors' understanding of rationality in western capitalism, modern philosophy and social theory, Habermas introduced a notion, which he calls 'lifeworld' [*lebenswelt*], in order to link action theory more convincingly with the rationalisation processes. Though different thinkers have focused on the 'lifeworld' as a cultural storehouse, or as a source of expectations about the ordering of social relations, or as a milieu out of which individual competences for speech and action are formed, Habermas wants to emphasise the fact that part of what constitutes a rationalised lifeworld is its "structural differentiation" which has three dimensions - 'culture', 'society' and 'personality'.

To Habermas (1987, p138), culture means: "the stock of knowledge from which participants in communication supply themselves with interpretations as they come to an understanding about something in the world". He uses the term society to mean "the legitimate orders through which participants regulate their membership in social groups and thereby secure solidarity". By personality he means "the competences that make a subject capable of speaking and acting, that put him in a position to take part in a process of reaching understanding and thereby to assert his own identity".

Habermas believes, "understanding not just how particular actions might be judged as rational, but how the rationality potential made available in modern culture is 'fed into' particular actions making possible a 'rational conduct of life' in general" is necessary. Moreover, the introduction of the concept of 'lifeworld' is necessary as it complements of the concept of 'communicative action'. According to Habermas (1987), it is this 'lifeworld'
that links the concept of communicative action firmly to the concept of society as well as, by directing attention to the 'context-forming horizon' of social action, taking another step away from the subjectivistic biases of modern social theory. Habermas believes that this 'lifeworld' concept can facilitate an understanding and make it possible to construe rationalisation primarily as a transformation of implicitly known, taken-for-granted structures of the lifeworld rather than of explicitly known, conscious orientations of action' [McCarthy, 1984]. Habermas further goes on to argue that

The object domain of social inquiry is symbolically prestructured, antecedently constituted by the interpretive activities of its members, the social scientists can gain access to social objects only via interpretive understanding (Sinnverstehen) - be these 'objects' social action themselves, their sedimentation in texts, traditions, cultural artefacts and the like, or such organised configurations as institutions, systems, and structures. (1987, p341)

Thus, Habermas sees that "the emergence of a rationalized lifeworld not only sets free the 'rationality potential of communicative action', but it is also a necessary condition for a new level of system differentiation, characterized by the development of a capitalist economy and modern form of administration"(p341).

Habermas maintains that the process of coming to an understanding of a specific situation must take place against the horizon of a lifeworld. According to Habermas, it is from the viewpoint of understanding-oriented action that the lifeworld "stores the interpretive work of preceding generations" and, thus, functions as a "conservative counterweight to the risk of disagreement that arises with every actual process of reaching an understanding". In fact, borrowing from phenomenological studies, Habermas draws attention to a culturalistic concept of 'lifeworld'. He argues that it is the cultural patterns of interpretation, evaluation, and expression that serve as resources for the achievement of mutual understanding by participants who want to negotiate a common definition of a situation to arrive at a consensus regarding something in the world. Such an interpreted action situation, Habermas (1987, p134] argues, circumscribes

.. a thematically opened up range of action alternatives, that is, of conditions
and means for carrying out plans. Everything that appears as a restriction on corresponding action initiatives belongs to the situation.

It is actors, according to Habermas, who always keep the lifeworld at their back as a resource for action oriented to mutual understanding. Any restrictions (problems or resistance) that circumstances place on the pursuit of an actor's plans also appears to the actor as elements of the situation. Such a view of cultural patterns of interpretation, evaluation and expression of action situation, according to Habermas, does not fall under formal world-concepts, that is, by means of which participants come to an understanding about their situation. If the actors cannot grasp the action situation from the cultural patterns and language, it is then in need of the "repair work of translators, interpreters, and therapists". That is, where their research endeavours emerge. Habermas spent quite some time and energy and devoted space in his early writings, especially in *Theory and Practice* to describing how such endeavours can be accomplished [(see Habermas 1974, pp1-41; see also the discussion in Held 1980, Thompson 1981, Guess 1981, Roderick 1986, and Rasmussen 1990)] .

2.5.1.1 *Symbolic Reproduction Process and Rationalisation*

Within Habermas's theoretical framework, understanding the symbolic reproduction processes of western capitalism is the same as understanding how the *lifeworld* (culture, society and personality) is reproduced. That is, how communicative action generates ongoing patterns of social relations and the integration of individuals into them. This is considered to be an interesting principle of "sociation". For it is after removing the problems (if any) that each agent's own critical capacities are increasingly integrated into the on-going reproduction of the lifeworld. Accommodation of a new experience to the stock of "the unproblematic" creates a new dimension: what Habermas calls the "second order" rationalisation. In order to conceptualise such a concept he thus introduced a new concept, what he called the 'rationalised lifeworld' rather than simply the 'lifeworld'. Habermas's main argument in developing such a concept of rationality is to give more attention to the
experience of achieving a mutual understanding by real actors that is free from coercion. If this can be carried out at a reflective level, Habermas believes, it can open up the ground to gain intersubjective recognition for criticisable validity claims, which can ultimately help in identifying and correcting mistakes, that is, of learning from them. In other words, by reflecting the reason to act rationally, it can ultimately constitute a domain of 'self-reflective' or 'critical knowledge' (Bottomore, 1984, p57). A result, according to Habermas, will be the enhancement of autonomy (Held 1980, p255). Thus, Habermas (1987b, p117) goes on to argue that "man (sic) for if he is indeed an autonomous and fully responsible being", cannot escape the conclusion that he is the author of crimes, he, then, can distinguish between transcendental man and empirical man. In this way, Habermas thinks, of how to create a "second order" dimension of societal developments including micro-organisational change.

To develop a more adequate framework Habermas returns to the communicative practice of everyday life, the medium of symbolic representation. Habermas (1987, p208) argues:

In coming to an understanding with one another about their situation, participants in communication stand in a cultural tradition which they use and at the same time renew; in coordinating their actions via intersubjective recognition of criticizable validity claims, they rely on memberships in social groups and at the same time reinforce the integration of the latter; through participating in interaction with competent reference persons, growing children internalize the value orientations of their social groups and acquire generalized capabilities for action... Under the functional aspect of reaching understanding communicative action serves the transmission and renewal of cultural knowledge; under the aspects of coordinating action, it serves social integration and the establishment of group solidarity; under the aspect of socialization, it serves the formation of personal identities.

This is a reason why Habermas sees that "to the different structural components of the lifeworld (culture, society, personality) there correspond reproduction processes (cultural reproduction, social integration, socialization) based on different aspects of communicative action (understanding, coordination, sociation), which are rooted in the structural
components of speech acts (propositional, illocutionary, expressive)" (White 1990). These structural correspondences permit communicative action to perform its different functions and to serve as a suitable medium for the symbolic reproduction of the life world.

It is worth mentioning that the existence of Habermas's notion of a rationalised lifeworld, as argued by White (1990, p102), does not mean that all communicative action will make equal use of its potential [see for example Colignon and Covaleski (1988) - for purposive rational communicative action]. Rather, Habermas seeks to develop a multi-dimensional concept of lifeworld. He believes it is through this multi-dimensionality that the lifeworld is symbolically reproduced and has become a central feature in Occidental capitalism. If his argument is correct then it can not be suggested that the positivistic theories and strategies in accounting can reflect such a complex strategically oriented reality (ie, reproduction processes of the lifeworld).

To Habermas, social integration presents itself as part of the symbolic reproduction of the lifeworld which depends not only on the reproduction of membership (or solidarities) but also on cultural traditions and socialisation processes. But to him the functional integration is a material reproduction process of the lifeworld that can be conceived as system maintenance. Habermas argues that the transition from one problem area to another is tied to a change of methodological attitude and the conceptual apparatus.

Some accounting researchers (cf. Boland and Pondy 1983, 1986; Hopwood 1983, Covaleski, Dirsmith and Jablonsky 1985; Covaleski and Dirsmith 1986, 1988, 1990; Chua 1988, Boland 1989, Preston 1986) have concentrated on demonstrating that accounting plays an important role in the 'symbolic reproduction process', be it in organisational or societal aspects. Moreover, accounting is also viewed as an 'instrument' through which a mapping task of material reproduction (functional integration) is fulfilled, as, for example, through the formulation of budgets and the institutionalisation of rules. However, it is Marx who was struggling with the problem of how to understand the interconnection
between the processes of the material and their symbolic reproduction. Habermas, like Marx, is especially interested in the impact of the imperatives of material reproduction on everyday life as well as the role ideology plays in how these imperatives can be understood (White 1990). Thus, in order to grasp the systemic structure of modern life, Habermas suggests it is necessary to consider not only the critique of instrumental reason, but also the critique of functionalistic reason. According to Habermas, this can be achieved only when a system perspective is integrated with a communicative model of action. From the resulting viewpoint, White (1990, p104) argues that the key notion of reification can then be reinterpreted as \textit{deformation of lifeworld} which is \textit{systemically induced}.

White argues that

\begin{quote}
When Habermas speaks of functionalist reason, he is speaking of rationality as conceptualized within systems theory. A system becomes more rational as its complexity increases; that is, as its range of adaptation to environmental changes is enhanced. (1990, p104)
\end{quote}

Although the same line of thought has been advanced in contemporary contingency theory of management accounting, at least theoretically, theorists have so far only adapted the positivistic methods of cause-effect calculations for empirical investigation and are restricted by its limitations (see Neimark and Tinker 1986, pp 370-77). It is also argued that relationships so far found from adaptation of the positivistic methods are shown to be 'weak' and the conclusions are fragmentary (Dent 1990). Questions such as what is to be adapted and how it is to be adapted, only provided some panoptic generalisations which are empirically unacceptable. The methodological restrictions of the positivistic methods and testing of theory undermine the processes by which a 'rationalised lifeworld' (ie, culture, society, and personality) is symbolically reproduced.

In the differentiated structures of a rationalised lifeworld, Habermas sees that the actions increasingly need to be coordinated by consensual agreement (say including 'management by exception' or 'participatory budgeting' at the inter-organisational systems
level) rather than by normative prescriptions only. However, with this progressive shift in the way actions are sociated there is, according to Habermas, a corresponding increase in the potential for 'dissensus' and 'instability'. Habermas was not blind to the modern structure of consciousness in that he recognises the objectivising attitude of the modern subjects towards the social as well as the natural world. Thus, he certainly realises that such an objectivising (strategic) orientation, which has links with money and power, makes the action coordination either increasingly cut off or 'uncoupled' from the 'lifeworld context' (where the processes of understanding are always embedded). For example, Dent argues that "the extensive use of short-term financial calculations to appraise managerial performance is deemed to have directed managerial attention away from fundamental value-creating activities, motivating instead opportunistic behaviours which have less permanent benefits, both in market place and in corporate finance offices" (1990, p3). Such a 'colonisation' (more emphasis on this will be added later) in organisational practices may lead to more and more social consequences in the long run (such as corporate failures).

A crucial question that can be raised here is how can we understand the integration between the "material" and "symbolic reproduction" processes of any real action situation? Habermas suggests that one solution would be to incorporate the 'internalists' and the 'externalists' for broadening the perspective of societal rationalisation [White, 1990]. This shift of methodological attitude at least, according to Habermas, will limit the objectivising attitude to the lifeworld.8

White (1990, p103) argues that Habermas's account of viewing lifeworld phenomena possesses characteristics which fall into a 'weak' category, a rather 'strong' view (which traces its roots to Gadamer and Heidegger) as far as methodology is concerned. For Habermas the 'lifeworld' is never rendered totally transparent. Rather, it is 'co-given' in the

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8 It seems it is a long (rather slow) process to get there, that is, to see Habermas's 'rationalised lifeworld' or change of 'evolution' in the terminology of Smith (1982) and Laughlin (1991) or strategic 'reorientation' change in the terminology of Dent (1990).
flow of experience as a certain, familiar ground of every situationally determined interpretation. Thus, according to Habermas, it becomes a learning process that is associated with modernity which allows for the reproduction of the lifeworld in a more conscious way and becomes constitutive and enabling though it has limits in its "weak" sense; a reason why Laughlin (1990) suggests Habermas's account is of 'middle range thinking', neither 'weak' nor 'strong'.

2.5.1.2 *Individuation Process and Rationalisation*

Habermas maintains an epistemological totality, so that it does not overlap with the thought of his predecessors. This brings his attention back to previous social theorists including Mead who advanced the conceptual genesis of 'self and society' as an individualistic model of social action. Habermas did not totally reject the account of Mead but rather put forward an argument against him that

"... Individuation processes are simultaneously socialization processes (and conversely), that motivations and repertoires of behavior are symbolically restructured in the course of identity formation, that individual intentions and interests, desires and feelings are not essentially private but tied to language and culture and thus inherently susceptible of interpretation, discussion and change..." (McCarthy 1984, pxx]

Thus, he goes on to argue that Mead's account does not give adequate consideration to the external factors that may influence the actual course of action. Mead does not give the functional aspects equal play to the structural aspects and he (Mead) generally neglects the constraints that issue from the material reproduction of society and reach right into the action orientations of sociated individuals.

Habermas argues that "individuals cannot 'step out' from their lifeworlds nor can they objectify them in a supreme act of reflection". As McCarthy (1984, pxxiv) notes, according to Habermas,

"It is in the form of 'language' and 'culture' that this reservoir (culturally transmitted and linguistically organised stock of interpretive patterns) of implicit knowledge supplies actors with unproblematic background"
convictions upon which they draw in the negotiation of common definitions of situations.

The key to Habermas's theoretical reconstruction of his predecessors' theories is the distinction between the "lifeworld" and the "systems", which he presents as a distinction between two fundamentally different ways of approaching the study of society. Conversely, he also tries to integrate this two-level concept of society by imagining a complete understanding of modernity in western capitalism. In so doing, he argues that the existing approaches are typically "selective" and "one-sided".

2.5.2 Multi-Rationality and Modernity

Habermas draws new insights into the rationalisation processes by going back to Weber, Durkheim, Mead, Marx and Parsons. He has done this by evaluating their respective concepts and theories such as the concept of "division of labour", "individuation theory", "theory of value", "action and system theory". Habermas argues that consideration of either of these concepts and theories individually would lead to a one-sided analysis of modernity. This one-sidedness, according to Habermas, does not conceptualise such dilemmas as the 'loss of meaning' and the 'loss of freedom' which have he argues, the counterfactual possibilities for organising social action differently. In order to open up the conceptual space for such lines of thought White notes that, according to Habermas

.. one has to make two major theoretical shifts. On the one hand, the theory of communicative action has to be integrated with an account of the lifeworld; and, on the other, the action-theoretical frame of analysis has to be supplemented with a systems-theoretical frame. (1990, p97)

In an attempt to uncover the deficiency of Mead's account of 'individuation' theory, Habermas first drew attention to Durkheim's account of how the forms of social solidarity change with the division of labour and then, secondly, to Parsons' theory of social system. In drawing attention to Durkheim's consideration of the "division of labour" (which also has a link with Weber 9), Habermas provides an explanation of how the growing "division of

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9 According to Weber, societal rationalisation was identified with growing purposive rationalisation. But for Habermas such an identification is not necessary. One can, Habermas argues, open up the question of
labour" is connected with the changing forms of social solidarity and why it leads, in the modern period, to symptoms of social disintegration. Taking this as a point of departure, McCarthy (1984, pxxvi) argues that "Habermas seeks to reconstruct a Marxist approach that traces pathological forms of symbolic reproduction not to the rationalization of the lifeworld itself but to constraints issuing from processes of material reproduction". This is supportive of Habermas's arguments, as follows:

[the] system and lifeworld appear in Marx under the metaphors of the realm of necessity and realm of freedom (emphasis added). The socialist is to free the latter from the dictates of the former. It seems as if theoretical critique has only to lift the spell cast by abstract labour (subsumed under the commodity form). The intersubjectivity of workers associated in large industries is crippled under the self-movement of capital; theoretical critique has only to free it of its stiffness for an avant-grade (pioneers) to mobilize living - critically enlivened - labour against dead labour and to lead it to the triumph of the lifeworld over the system of devalorised labour power...

Marx's error stems in the end from dialectically clamping together system and lifeworld in a way that does not allow for a sufficiently sharp separation between the level of system differentiation attained in the modern period and the class-specific forms in which it has been institutionalized. Marx did not withstand the temptations of Hegelian totality-thinking; he construed the unity of system and lifeworld dialectically as an 'untrue whole'. Otherwise he could not have failed to see that every modern society, whatever its class structure, has to exhibit a high degree of structural differentiation.(1987, pp340-341)

By advancing such arguments Habermas (1987) sees that Marx is unable to distinguish the repressive uprooting of the traditional forms of life. The theory of value, according to Habermas, "provides no basis for a concept of reification, enabling us to identify syndromes of alienation relative to the degree of rationalization attained in a 'lifeworld' ". Habermas (1987, pp341-342) further maintains that "at this stage of post-traditional forms of life, the pain that the separation of culture, society, and personality also causes to those who grow into the modern societies and form their identities within them counts as a process of individuation and not alienation". This leads him to argue that "(i)n an extensively whether purposive rationalisation is the only possible way of developing that broader potential for the rationalisation of action which is made available with the culture of modernity."
rationalised lifeworld, reification (materialisation) can be measured only against the conditions of communicative sociation, and not against the nostalgically loaded, frequently romanticised past of premodern forms of life”.

Following a long discussion Habermas (1987, p340) advances three potential weaknesses in Marx’s theory of value. First, Marx’s classification of system and lifeworld lies under ‘the metaphors of the realm of necessity and the realm of freedom. Secondly, Marx was unable to distinguish between the aspects of reification of traditional forms of life and that of structural differentiation of the lifeworld. Thirdly, the theory of value is seen as an overgeneralisation of the case of the subsumption of the lifeworld as system. This suggests that Marx’s theory of value allows for only one channel through which the monetarization of labour power expropriates from producers work activities into performances. Although Marx was unable to produce a satisfactory account of late capitalism, Habermas (1987, p343) argues that Marx was right to assign an evolutionary primacy to the economy in western societies.

Returning to Marx, who has analysed ‘economic reification’ processes based only on class conflict as the basic causal factor, White (1990, p108) argues that Habermas sees the ‘decisive weakness’ in the former theory is the "overgeneralisation of a special case of the subsumption of the lifeworld under system imperatives". White (1990, p108) further argues that, according to Habermas, "although the cause of reification may arise in the sphere of labour and capital, the process of reification and its effects is [may] also [be] experienced in other spheres of life". This expanded field of action of Habermas’s reification process of systemic integration is reproduced in Figure 2.2.

In respect to the content of Figure 2.2, White (1990) explains that, according to Habermas, "Marx has analysed the reifying effects of systemic integration only on one role (no. 1), Weber added another (no.3)". But "in order to comprehend the true dimensions of the loss of freedom in advanced capitalism", according to Habermas, "one must take into
account all four roles and their changing relationships, as well as changing relationships between the two subsystems" (White, 1990, p108).

Figure 2.2  

**Habermas's Framework Regarding the Relation between System and Lifeworld from Systems perspective**

<table>
<thead>
<tr>
<th>Lifeworld; Institutional Orders &amp; Roles</th>
<th>Exchange Relationships and Media of Exchange</th>
<th>Media - Steered Subsystems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Sphere</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Employee</td>
<td>Labour Power (P) ← Income (M)</td>
<td>Economic System</td>
</tr>
<tr>
<td>2 Consumer</td>
<td>Goods and services (M)← Demand (M)</td>
<td></td>
</tr>
<tr>
<td>Public Sphere</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Client</td>
<td>Taxes (M) ← Organisational Achievement (P)</td>
<td>Administrative System</td>
</tr>
<tr>
<td>4 Citizen</td>
<td>Political Decisions (P) ← Mass Loyalty (P)</td>
<td></td>
</tr>
</tbody>
</table>

Key: M Money  P Power
(Source: White [1990, p109])

It is White (1990), particularly in his chapter five (v), who has most thoroughly clarified the recent works of Habermas to the English speaking world, and in so doing has provided some additional insights into Habermas's extended thoughts on the pathologies of the rationalisation processes and 'modernity' in contemporary Occidental capitalism.

An intermediate reflection on the hypothesis that Habermas has advanced is that a social evolution occurs through a two-level process of differentiation. On the one level, there is a growing differentiation between the lifeworld and system aspects of society, a "decoupling of system and lifeworld". Thus, he sees that "the mechanisms of functional integration are increasingly detached from the lifeworld structures, which need social
integration or else congeal into quasi-autonomous subsystems of economic and administrative activity" (Habermas 1987). On the other, he argues that there is a progressive differentiation within the dimensions of a lifeworld and a system. He further maintains that these two levels do not simply lie parallel to one another, they are interconnected. Thus, he argues that the systemic mechanisms have to be anchored in the lifeworld, that is, to be institutionalised. This institutionalisation is a necessary condition of system integration, that is, of formally organised subsystems of purposive-rational economic and administrative action, which need to be rationalised in the lifeworld.

Habermas is careful in considering the situation where 'collective bargaining' is present. It seems he wants to advance more insights in the area where such bargaining situations do not exist such as the area of 'juridification' (as cited several times about the German Law). This raises a question as to how can one apply a Habermasian concept in an organisational analysis, where there may exist a strong bargaining situation (for at least resource allocation purposes). At the same time, even if such a bargaining situation does exist, it cannot be claimed that the 'lifeworld' of any researched organisation is totally rationalised in a Habermasian sense.

White argues that

The kind of reification Habermas wants to illuminate occurs to the degree that the expansion of systematic integration begins to undermine functions essential to the reproduction of a rationalised lifeworld. The mediatization of the lifeworld takes the form of a 'colonisation of the lifeworld' when the systematic media of money and power begin to displace communicative sociation in core spheres of action within which the three processes of symbolic reproduction takes place: cultural transmission, social integration and socialisation. The 'communicative infrastructure' of a rationalised lifeworld is constituted by understanding-oriented action which create a rational context for the 'transference of validity' through these three processes. Such a transfer of rational motivation (in a communicative sense) is only possible ... when actors take up a performative attitude toward other subjects and their validity claims. Action which is coordinated by money and power, on the other hand, requires only an objectivating attitude and an orientation for success. (1990, pp109-110)
In this way "it is the colonization processes of lifeworld reproduction which generates the peculiar pathologies of advanced capitalism" (White, 1990, p110).

Likewise, Habermas has advanced many forms of discursive arguments in illuminating the syndromes of a rationalised societal activity (where organisational activities are not excluded!), which suggests that there exists multi-rationality.

2.6 Eclecticism and Possible Accounting Interventions

It is only from the early 1980s that an eclecticism of Habermasian thought and theses appeared in accounting research. The initiation of such a benchmark was done by Laughlin with a study on the Church of England in the UK (Laughlin 1984). This is followed by a publication in Accounting, Organisation and Society in 1987 (Laughlin 1987). Laughlin (1987) has explored Habermas's approach in reflecting on and enhancing a critical understanding of accounting systems that operate in an organisational context. Laughlin (1987, p485) proclaims that Habermas's critical thoughts and approaches have the greatest potential both as a methodological approach for understanding and changing accounting system design and for investigating social phenomena more widely.¹⁰

After examining a wide range of the literature on organisational change, Laughlin (1991) further examined how Habermas's framework fits into the theoretical development of organisational change. According to Laughlin, the basic premises for such a discursive argumentation centre on the idea that an organisation is an amalgam of 'interpretive schemes', 'design archetypes' and 'sub-systems' (see for original emphasis - Laughlin 1991). Laughlin argues that ¹¹

Organisations contain certain tangible elements about which intersubjective agreement is possible (eg. the phenomena that call for instance buildings,

¹⁰ A further consideration of the leitmotifs of this work will be addressed in chapter three whilst evaluating Habermasian methodological positions as well as Laughlin's (1987) advancement of Habermas' methodology.

¹¹ The term tangible is used in the literature. However, the term visible is preferred as it avoids any unnecessary ontological connotations and serves to stand in contradistinction to invisible (see section2.7).
workers, machines, finance and accounting systems and the behaviour and nature of these elements) and two less tangible dimensions which gives direction, meaning, significance, nature and interconnection to these more tangible elements and about which intersubjective agreement is very difficult. This less tangible part .... (has two progressive) invisible parts: a design archetype and interpretive scheme. (1991, pp4-5)

It is this 'less tangible' (ie, what Habermas called transcendental reality) part of the 'designing' literature, be it accounting systems design or any other systems design, that is difficult to grasp. For the tangible part it is a matter of 'making things visible' (Swieringa and Weick 1987, Hopwood 1990), such as including identification of costs and timely collection of information (Kaplan 1984, Johnson and Kaplan 1987), and (even) "initiating and sustaining a forceful (purposive rational) action" (cf Swieringa and Weick 1987). On the other hand, this is not to suggest that this (tangible part) would not 'loom large' (cf Hopper and MacIntosh, 1990, p5). It is important to realise that these (parts) are context dependent. Habermas maintains that they (and understanding them) do (does) not fall under the formal world-concepts (as mentioned earlier). But, for the 'less tangible parts', it is the participants who come to an understanding of their action situation through the cultural patterns of interpretation, evaluation and expression. Understanding these cultural patterns may have greater potentiality for understanding the 'change' processes at both the micro-organisational and societal levels.

Laughlin [1991] argues that "organisational change can only be understood by tracing the process, track or pathway a disturbance/kick/jolt takes through an organisation". With a view to this, by examining the organisational development (OD) theories, Laughlin [1991] delivers four pathways as alternative 'processual' models of organisational 'transition' and 'transformation', viz 'rebuttal', 'reorientation', 'colonisation', and 'evolution' models.

Laughlin advocates that the former two categories (ie, rebutal and reorientation models) are 'first order' changes and the latter two categories (ie colonisation and evolution models) are 'second order' changes. He suggests that this dichotomy between 'first order'
and 'second order' change is consistent with Habermas's thoughts. Thus, Laughlin goes on to argue that

the above three models or pathways (eg. 'rebuttal', 'reorientation' and 'colonisation') of change can be seen as progressive forms of colonisation in a Habermasian sense. Change of a 'rebuttal' nature is clearly a weak form of colonisation since it is of a first order (morphostatic) nature and makes little impression on the life of the organisation. Change of a 'reorientation' nature is a stronger form of colonisation as it involves changing the organisation even if it is in a first order (morphostatic) sense. As with 'rebuttal' type changes 'reorientation' change is steered and guided by the interpretive schemes of the organisation even though there is greater intrusion into the internal life of the organisation. Change of a 'colonisation' nature, on the other hand, is a complete form of colonisation being a second order (morphogenetic) change forced upon the organisation but in an autopioetic sense.(1991, p21)

The final type of change elaborated by Laughlin (1991) is the model of change through 'evolution'. Laughlin inculcates for such a change to occur requires major shifts in the "interpretive schema" (as he calls it). That is, the organisational participants freely and without coercion choose it to have occurred through a discursive process between themselves (actors). This is what Habermas also preaches for tracing change in a broad societal development, which has an evolutionary effect; what Laughlin [1991] and others (cf. Smith [1982]) have denoted as the change of 'evolution'.

Arguably, it seems a difficult task to follow through the identification of these 'processual' changes in an empirical setting (as indicated above). However, as a rule of thumb, it is possible to proceed with Habermas's 'middle range thinking' (see Laughlin 1990) for understanding how such change processes occur in an organisational setting. A reason for such an appreciation is that to Habermas the "lifeworld" can never be fully transparent for such orientations; rather, it is a learning process. This may be a reason why Broadbent et al (1991) go on to argue that 'Habermas does only provide the framework', from which they have developed a 'balance' model for discussing the financial and administrative changes of the National Health Services (NHS) in the UK. Chua and Degeling (1990) also applied Habermas's framework in a case analysis of the US health care industry.
These above studies are conducted in community service organisations. These studies used Habermas's theory of colonisation in theorising accounting effects on economic and social life, whereas this study is intended to be carried out in a micro profit making manufacturing organisation. Though at this stage it cannot be suggested how Habermas's thoughts, including the 'colonisation theory', can be applicable to a profit making organisation, its potentiality will be taken into account for understanding and theorising the 'purposefulness' and uses of "accounting-in-action" including the processes of change. Although the above mentioned research efforts have demonstrated that Habermas's framework does provide some guide to thinking, theorising, and investigating accounting as social phenomena, not enough has been done; much more work is needed in order to substantiate (or otherwise) Habermas's framework, especially locating such a framework in reflecting 'accounting in action'.

As well, a major focus of this study will be on the question of how the proposed organisation (the researched) has been integrating its 'lifeword' and 'systems', at least to reflect on the interface between the (strategic) change and accounting related areas. An understanding of them will enable reflection on the socio-economic implications of the development of a critical theory. So far, there have been many promises made regarding investigation as a problematic in an organisational setting. However it may be that much more needs to be proposed. This suggests that it might be a reason why critical accounting researchers are amazed at the 'positivistic' notion of the identification of the problems beforehand. However, the ultimate concern is to investigate and reflect on the central question of the study, of how "accounting-in-action" has become purposive, is being used and is to be used, including the means of doing so in a locale (ie, in an organisational context).

12 Of course, once again this is tentative, but nevertheless makes this researcher seek access to an empirical setting, ie, in a micro-organisational setting. It will be shown in chapter four how such access is obtained. The serendipity patterns of the investigation processes caused this researcher to construct the topic of this thesis.
2.7 Towards developing a Skeletal Model in understanding the nature of meta-level organisational 'culture' and its transition processes in the quest of differing types of knowledge in an organisational context.

It is worth stressing what was suggested earlier, that neither accounting nor organisations exist (in any significant manner) independently. That is, accounting exists for organisations and it is one of the many occupations that exist in organisations. Any ramifications of accounting (social or political) must be considered in relation to organisations. Thus, any meaningful ramifications can only be expanded if the organisational analysis of accounting is considered a primary research agenda.

As has been indicated earlier, this study attempts to investigate 'accounting-in-action', more particularly accounting in an organisational context, and therefore, it would be appropriate to further enhance an understanding of differing types of meta-level knowledge that a researcher may come across in the quest of investigation of such a context. In so doing, an attempt is made to develop a skeletal model using the Habermasian notion of "culture". According to Habermas (1987), the meaning of 'culture' is taken as "the stock of knowledge from which participants in communication supply themselves with interpretations as they come to an understanding about something in the world" (see section 2.5.1).

A reason for this model being denoted as "skeletal" is that, according to Laughlin (1990), it is incomplete and requires specific empirics to flesh it out. It allows both variety and generality in thinking (Booth 1991). It is a belief that this understanding will lead to a focus on the necessity of different investigation approaches that may be required in the quest for differing types of organisational knowledge. However, a cautionary note needs to be made regarding the uses of the term "culture" (stock of knowledge - in a Habermasian sense) here as the intention is to focus on and develop a skeletal model only and to show that the different types of knowledge sought in an organisational context may need differing reifying approaches.
Developing the Skeletal Model:

It can be argued that an organisational 'culture' (ie. stock of knowledge), at a particular point in time and space, is an amalgam of both visible (tangible) and invisible knowledge (as shown in Figure 2.3). How the 'invisible' can become a part of the stock of knowledge may be confusing to some but it is because the organisation in question always keeps an agenda for 'what they are not', such as including the future possibilities, hidden meanings and unseen realities which are invisible to the organisational actor(s) at particular points in time. At the same time, in a dynamic, changing reality it is possible that what is tangible now may become invisible at some subsequent point of time (that is, either existing systems become obsolete or more complex). Thus, the addition of 'what they are not now' (invisible knowledge) to 'what they are now' (ie. tangible knowledge) makes the organisational knowledge total. In other words, an impetus for change in an organisational context lies with the balancing of the 'visible' and 'invisible' sets of knowledge. In addition, it can be argued that the organisation in question uses both sets of knowledge for the purposes of their system maintenance as well as for social integration.

The dichotomies between the 'technical' and 'non-technical' classification are intentionally avoided here, as it is often a debatable issue and difficult to isolate either classification in any general sense without consideration of a specific context (see Latour and Woolgar 1979, Latour 1987). Note also that the details of organisational transformation processes in an input-output sense are eschewed (for such a discussion see Tinker and Lowe 1980, Otley and Berry 1980, Lowe and Machin 1983, Wilson and Chua 1988). In order to clarify the need for perspective choices (choices for approaches) for different realities (accounting) that may arise in an organisational analysis, a taxonomic classification of visible and invisible in which both 'technical' and 'non-technical' are moulded (embedded) is developed.
The elements in the box containing 'visible knowledge' may be numerous. For simplicity, a limited set of such knowledge is broadly categorised under the notion 'visible' such as existing systems in use (ie information in use), building, labour, work (purposive rational actions), communicative knowledge (interaction - symbolic interaction and communicative action), society and history. Similarly, the 'invisible' box can embrace numerous unknown/unseen realities which are often latent. The elements in this box include future possibilities (new work possibilities), communicative knowledge (interaction - symbolic interaction and communicative action), society and history. From Figure 2.3, it is apparent that at Time 1 in both boxes certain elements are common such as communicative knowledge, society and history. A reason for this is that at a particular point of time these realities can never become totally transparent. They are evolving (moving) by nature.
Like societal issues and communicative knowledge, history is also considered as an amalgam of both visible and invisible sets of knowledge. It is visible for there are some existing histories about their previous activities and relations as they know it now (which can be seen as 'instrumentalistic' by nature at the time). It is invisible because there is a need for constantly 'reworking' and 'reinterpreting'. (Birkett 1989)

Through particular management practices, which are shown in between the two time dimensions of Figure 2.3 as transition processes, a utilisation of a particular type of change process or design archetype via an interpretive scheme may take place (cf. Laughlin 1991). It is through these processes that the organisational culture is evolving (moving). The nature of such a change in an organisational culture can be seen as 'acontinuous' and 'aorganisational' (Boland 1990). It is 'aorganisational', because it is the actors who always keep their work situation at their back as a resource for action orientation to mutual understanding (Habermas 1987). Generally, it is the steering media (management) of an organisation which activates the processes of transition known as management practices.

By focusing attention on the shifting trend of organisational culture (especially at the micro level) over time, two important suggestions can be made and hypotheses formulated. First, as a good practice for the purpose of 'survival' the management may continuously review the organisation's existing visible knowledge base. In so doing, there may occur a change in existing systems or a greater visibility of the nature of the existing knowledge base for those elements, such as communicative knowledge, society and history, which enhances the organisation's adaptive capacity as a "tidying process rather than muddle things" (Cooper 1981, 1983). At the same time, it can be argued that when the steering media (management) of an organisation wants to balance the existing systems or increase its organisational adaptive capacity to uncertain environmental and societal complexities, it is possible that, instead of having more visibility, some elements (say communicative knowledge) may become more invisible, as shown in the Figure 2.3.
Secondly, at the same time, it can be argued that not all unseens can be fully seen or made visible/tangible or meaningfully understood at a particular point in time. Thus, there emerges a continual necessity for *more learning*. It is these learning processes through which the organisational culture (knowledge) recurrently evolves and rationalises (rather temporarily) and learning can be achieved.

If these insights are correct, an important question can then arise as to how to deal with the perspective choices in an organisational analysis of 'accounting in action'? In reply, it can be argued that if the researcher(s) wants to know only the 'visible knowledge' that organisational actors know at a particular point of time (say at Time 1 of Figure 2.3), he/she may need a perspective that would facilitate explicating 'what they are now' (remember, this is 'aorganisational' by nature): it is a question of knowing them (organisational phenomena). In so doing, it is to be noted that the researcher is not an actor. This raises the question of acting and knowing which is seen as problematic by social scientists.\(^{13}\) From the viewpoint of a researcher, something which is yet to be uncovered is how such an interpretation can be made possible; an interpretation which reflects the *true* representation of what the organisation in question sees as the tangible realities at hand at a particular point in time. It is also a question of whether such realities are available in a written (Wilson and Chua 1988) or any other visible form, at least for (say) communicative knowledge. *Secondly*, any attempt to comprehend, in order to *linguistify*, the 'invisible set of knowledge' for a particular action, say communicative action, may need a perspective which should facilitate explicating 'what they are not now'. It is important to bear in mind that such an explication cannot be conducted in a value-free and neutral way. If done successfully it would certainly enhance the predictive capacity of any real action situation. *Thirdly*, if we are to know the transition processes of how change in an organisational setting has been occurring,

\(^{13}\) It should be mentioned that functionally 'knowing' and 'acting' is not a single act. These are already divorced from positivism which claims that 'knowing' and 'acting' are a single act, especially at the level of instrumental and communicative action (Habermas 1978, p.212).
considering both visible and invisible realities, a formulation different from other approaches may be necessary. *Finally*, any judgement regarding 'what is good practice' and 'what is bad practice' may take a different form.

On the other hand, it cannot be assumed that accounting research can only be dealt with within a(n) (micro) organisational analysis. It may embrace some other area such as a broader organisational analysis (ie, industry analysis), an international comparison, or political and social discourses. It may be that such a discourse, based on critical accounting research, needs different formulations. Thus, if these possibilities (though not exhaustive) arise, then, as mentioned earlier, a choice in formulating any approach to research is necessary. Though this line of argument supports pluralism, as is argued by Cooper and Hopper (1990) it seems to provide a workable premise for critical accounting researchers.

From the above discussions, an argument can be made that the different scenarios for determining a 'problematic knowledge claim' for different possible realities, do not, in any sense, depend on strict adherence to a perspective. Rather, it is very much dependent on a wide variety of arguments and silences. As well, it cannot be assumed that matching perspective(s) in the course of knowing and linguistifying these (above) possibilities in an organisational setting can be achieved in any definitive way. Much of this matching depends to a large extent on the researcher's care in formulating the approach to the researching of such realities and the mode of representaion(s). It also depends on several other aspects, such as including gaining access to the organisation(s) and a deep understanding of the context as well as the researcher's ability to maintain such a difficult role. However, a reason for such a prescriptive focus is to clarify the problematic 'knowledge claim' in understanding the yet uncertain relationships of the nature of organisational 'culture' and its transition processes, which is an ultimate quest of the study at the action-orientation level. Obviously, understanding these 'cultural' processes does not necessarily mean that a change in a particular discipline will occur unless additions are made to this knowledge with
existing theory in the discipline or the development of a new theory if its advocacy deserves rejection of the former.

Thus, it is a question whether the concept of 'organisational change' can be considered parallel to that of 'change in a (pedagogic) discipline' that is to come. For example, particular organisational knowledge, say change processes, which are unknown to a researcher before investigations take place, cannot convey the total knowledge that exists in a discipline. An analysis of 'accounting-in-action' or analysis of any context at the action-orientation level provides a basis for substantiating the existing knowledge of the discipline. Of ultimate concern is the enhancement to the existing knowledge of the discipline by adding new insights (research outcomes) from an unknown context. These new insights may bring new forms of visibility, such as new meanings, new way of doing things, generating new thinking, etc, which will enhance change in context as well as filling in the gap between the theory and practice. Increasing 'linguistification' of the multiplicities from contexts and filtering them through, including writing history, analysing and theorising, may be a possible way of changing a discipline or a way of thinking about the disciplines, for example, accounting.14

The above discussion suggests that choosing a perspective in order to linguistify and theorise 'the doing of accounting' or 'accounting in action' may not be done in any definitive way, rather, a matching perspective at the action-orientation level of analysis depends to a large extent on the researcher's care in formulating the research approach considering the differing action-oriented contextual realities that are to be investigated.

Perhaps a further understanding of the methodological issues will provide a clear,

14 In this sense, one may find some similarity with Paul Feyerabend who argue against 'methodism' and 'subject object ideology'. It is to be pointed out that there exist, at least in one point, dissimilarities between Paul Feyerabend and The Frankfurt Social School, especially with Habermas in that the former believes that the 'epistemological anarchism' (Feyerabend 1975, p.168) is not necessary as a criterion for acceptable knowledge claim, but for Habermas it is a necessary postulate, otherwise there might be a possibility of overlapping.
positive direction in understanding these processes. As this research project has adopted a Habermasian critical approach for enhancing understanding of both the theoretical underpinning and methodological roots in formulating/developing an appropriate research framework for the study, it is intended to carry out a further analysis of Habermas’s methodological positions in the following chapter (ie chapter three).

2.8 Summary & Conclusion

This chapter has addressed some central issues in understanding the problematic "knowledge claim" in the "doing of research" on "accounting-in-action" to situate the theoretical stance of the study. It locates this study as an alternative to the positivistic theories and strategies generally known as critical studies in accounting research. This alternative stance of theories and strategies in accounting research is more recent, as well as diverse and growing. By elaborating the critical accounting movement, the chapter illuminates some of the characteristics and diversities of the critical accounting literature.

This chapter enters into a debate on a consideration of 'rationality and ideology' in the 'doing of research' on 'accounting in action'. In an endeavour to do so, a realisation has occurred that there is a necessity for understanding the issues of 'rationality and ideology' in 'the doing of research' at two distinct and inseparable levels, the meta-theoretical and action-orientation theoretical levels. For the action-orientation level of investigation, this chapter has focused on a central research question of the study: what, how and why accounting has become purposive, is being used and is to be used, including the means in doing so in a profit making manufacturing organisation?

The chapter also examines how the consideration of the socio-theoretical rationality can be related to theorising accounting effects in an economic and social context. In so doing, an apprehension is made adopting Habermasian critical thoughts and theses. A reason for such an adoption is that Habermas has reconstructed and advanced a range of challenging theses on the subject of modern philosophy and social theory including the
concept of rationality in conceptualising 'modernity' in Occidental capitalism and "the doing of research" (scientists' activities, social or otherwise) over his predecessors such as Marx, Weber, Durkheim, Mead, Lukacs, Horkeimer, Adorno and Marcuse which provides a new dimension to the concept of rationality and is used here to develop a framework. Such an adaptation not only has to be considered an enhancement in understanding a broader concept of rationality, but also a step towards understanding the methodological roots and theoretical underpinnings that determine the choices of appropriate research approaches.

Moreover, a central focus that has been advanced in this chapter is that organisational analysis can be seen as a primary agenda of research in accounting. A reason for this is that the roots of meaningful, yet uncertain, social and political considerations are in organisations.

An implicit motivation of this chapter can be seen as an initial "kick/jolt" in an endeavour to embark on a study of 'accounting-in-action' as well as to develop a framework for carrying out research in such a context. Arguably, in reviewing the critical accounting literature, it is suggested that it is not only Burrell and Morgan's (1979) paradigm of social theory that provides the necessary assumptions for perspective choices. Rather, there is a need for a further understanding about the nature of the context in choosing and formulating research approach(es). With a view to this, a skeletal model is developed in the final section of the chapter. It has been developed especially to enhance understanding of differing types of knowledge in an organisational context; one which seems to be very useful in formulating research approaches depending on the nature of the knowledge quest. A further argument has also been advanced in the form of a question of whether the concept of organisational change and change in a discipline that is to come can be considered parallel. Finally, the chapter searches for a further understanding of the methodological issues. Since the study uses a Habermasian critical theory approach for a propaedeutical reflection in developing a framework for the study, it is intended to carry out a further
analysis of Habermas's methodological positions in the forthcoming chapter (ie, in chapter three). Perhaps this may provide a more positive direction in formulating research approaches for differing realities, as has been advanced in the skeletal model.
Chapter Three

Making Sense of "the Doing of Research" on "Accounting-In-Action": An Evaluation of Habermas's Methodological Positions

3.1 Introduction

Embarking on a major study is dependent upon the way in which the researcher (1) resolves the theoretical and epistemological disputes in 'the doing of research' and (2) relates that to the analyses at the 'action-orientation' level - that is, at the level of empirical investigation. At the meta-theoretical (epistemological) level, this research programme inevitably assumes that the consideration of a particular paradigmatic position has a propaedeutic value, at least, in enhancing methodological understanding in "the doing of research". It is because of consistency, rather than attempting to solve the various riddles of a diverse range of perspectives (see chapter two) that entering into a paradigmatic position in order to situate the theoretical stance is deemed to be appropriate. For example, one such paradigmatic position this study has adopted is Habermas's critical theory approach. With such an adaptation, in the previous chapter an apprehension is made concerning various methodological and theoretical issues of the doing of research on "accounting-in-action". However, an elaboration of Habermas's methodological positions is still necessary.

Thus, this chapter aims at evaluating Habermas's positions for methodological corollaries. The organisation of this chapter is as follows. Before attempting the evaluation of Habermas's methodological positions, first, attention is drawn to a central question of whether or not the terms "methodology" and "methods" can be used synonymously in social science research. This is followed, secondly, by an evaluation of Habermas's methodological positions. The ultimate concern of this evaluation is to make sense of Habermas's methodological corollaries (if any) from the viewpoint of an individual researcher and how they can be intertwined with "methods" in carrying out research at a micro-organisational level. This is reflected, finally, throughout the later sections of the
3.2 Methodology vs Methods

An important concern in understanding 'the doing of research' is the awareness of the
dichotomies between the terms "methodology" and "methods". It is a long-standing debate,
not only a central concern of scientists in other branches of social sciences but also amongst
critical accounting researchers. For example, Gaffikin (1986, p5) argues that "(t)he term
methodology has been used in a loose and undisciplined fashion" (italics are mine). For,
according to Gaffikin (1986), the term 'methodology' has sometimes been confusingly used
to "designate the research methods and tools employed in a (certain) research programme".
He further argues that 'such a use of the term [methodology] bears little resemblance to its
original, philosophical connotations'. In a conference paper, Gaffikin (1991, p292) argues
that the "methodological studies in the sense philosophers (its original users) use it is not a
study of techniques and methods, but a study of the principles by which adherents of any
discipline learn to accept or reject knowledge".

The term 'methodology' has its roots in the schools of both the 'philosophy of science'
and the 'sociology of knowledge'. Irrespective of the differences that may exist between
these two broad schools of thought the usage of the term "methodology", in its general
sense, refers to the total processes by which the science of 'knowledge-gain' can be carried
out. In other words, 'methodology' is involved with the processes of thinking and
formulating a research agenda, and examining methods that are to be used in the process of
"knowledge-gain", as well as of "theorising". Such processes may differ from theorist to
theorist, or from school of thought to another, or from one individual researcher to another.
For example, to Mehan and Wood (1975) the term "methodology" may mean a "form of
life".\(^1\) For Habermas, although "methodology" is a topic of "emancipation", he provides a
general view that:

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\(^1\) It is to be noted that there exists no explicit definition as such in the writings of Mehan and Wood [1975].
Methodology is concerned with norms of the research process, which claim to be simultaneously logically binding as far as factual context is concerned and factually binding where the researcher is concerned. Regardless of whether methodology reflects on a research practice that is already in use, as in the case if physics, or whether, as in the case of sociology, its recommendations precede the research practice, methodology sets out a program to guide the advance of science. .. Methodological requirements. .. influence the way the sciences articulate their self-understanding. In part, methodological viewpoints set standards for research, and in part they anticipate its general objectives. Taken together, these two functions establish the system of reference within which reality is systematically explored. (Habermas 1988, p44)

Since Habermas sees "methodology" as a process of "reflection" and/or "emancipation", at least for "the organisation of social life", to him "methodology" may mean a science of "knowledge systems" which purports to be derived from epistemology. A similar line of argument can be found within the critical accounting literature where there also exists an explicit extended connotation as noted in the writings of Hopper and Powell (1985, p431) [following Burrell and Morgan (1979)] who suggest that three sets of assumptions such as "ontology", "epistemology", and "human nature", direct a fourth dimension of social science research, ie, "methodology". A similar argument is also to be found in Chua (1986).

Chua (1988) argues that it is possible that the adoption of "paradigmatic positions" (or methodological choices) may be confused with the adoption of "methods". This is implicit when she argues that

Interpretive sociology may be confused with ethnography as a method (participant observation research) or with conduct of case-study research. Yet the use of a research method does not bear a one-to-one relationship with the adoption of a paradigmatic position. (Chua 1988, p72)

This statement is indicative of two themes. On the one hand, it suggests that a research "framework" using a particular "paradigmatic position" cannot be equated with "methods", as far as "interpretive sociology" is concerned. On the contrary, it also cannot be assumed that a framework (or paradigmatic position) that is chosen is simply a neat-fitting theoretical
model which will match with "methods" or vice versa. "Methods" are the techniques or tools by which data is gathered and analysed; the ways in which interviewing, documenting, observing, recording, note taking, acting, writing (mode of representations) and collecting any 'body of knowledge' can be conducted, and the use of statistics both inferential (ie, the testing tools of 'positivist') and descriptive. Researchers need to pay careful attention to this.

The literature that deals with "methodology" and "methods" in social science research is diverse, complex and growing. It is viewed as a daunting task, especially summarising such issues with any completeness. Thus, the discussion above regarding "methodology" and "methods" cannot be viewed as exhaustive. Rather, a central interest of this chapter is to show how a Habermasian paradigmatic position in regard to "methodology" can be intertwined with "methods". The ultimate concern of this evaluation is to make sense of how Habermas's methodological corollaries (if any) from the viewpoint of an individual researcher can be intertwined with 'methods' in carrying out research at a micro-organisational level. That is, to investigate what, how, why contemporary (management or internal) accounting practice has become purposive, being used and to be used, including the means of doing so in a micro-organisational context.

3.3 Habermas's Methodological Positions

Although Habermas does not define any particular issue or phenomenon, he does express several general views regarding many issues of critical social theory including the aspects of "methodology" (cf. Laughlin 1987). Thus, it is difficult, if not impossible, to pinpoint Habermas's methodological positions in a precise way. Like many issues of critical sociology, Habermas's positions regarding "methodology" are also multifaceted.

However, from Habermas's different theses and writings the following four categories of his methodological positions can be made possible. It is to be noted that these positions cannot be considered as mutually exclusive.
First, Habermas's methodological position can be seen as a distinctive kind of advancement within the arena of contemporary critical social theory. This is because of his advancement of several competing approaches, that is, certain critiques against positivism, which can safeguard critical sociology from dogma. These are: (1) against 'a reduction of intentional action to behaviour'; (2) against 'reducing the meaning complexes objectified within social systems to the contents of cultural tradition'; (3) against 'the reduction of all social conflicts to unsolved problems in the regulation of self-governing systems'; and (4) against 'overburdening the concepts of the philosophy of reflection' (see Habermas 1973, pp10-13).

Secondly, Habermas's methodological position can be seen as theoretical reconstructions of the ideas of classical social theorists on the subject of "communicative action" and "modernity". Some of these concerns are, as noted by McCarthy (1984, p, vi):

1. To develop a concept of rationality that is no longer tied to, and limited by, the subjectivistic and individualistic premises of modern philosophy and social theory;
2. To develop a two-level concept of society that integrates the lifeworld and system paradigms; and
3. To sketch out, against this background, a critical theory of modernity which analyzes and accounts for its pathologies in a way that suggests a redirection rather than abandonment of the project of enlightenment.

Thirdly, Habermas's methodological position can be seen as what he calls, "the beginning of a social theory that is concerned to validate its own standard". In other words, by specifying the processes of a real action situation, that is, by specifying the change processes in order that real actors (active participants) can achieve a better state through the use of increasingly discursive linguistic skills. The articulation of such language processes is to be found in his early writings, especially in the book Theory and Practice (see Habermas 1973, pp1-41). Such articulations however cannot be reduced to a methodological corollary at the level of an individual researcher.2 In fact, according to

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2 A further discussion in elaborating methodological corollaries at such a level will be drawn in chapter
Habermas, such processes can only be considered as a methodological perspective for real action situations through which his beliefs of the "organisation of social life" can be carried out "rationally". This view has also been reflected in his theory of communicative action, followed by the discussions on the rationalisation paradox or modernity (see chapter two).

*Fourthly,* Habermas's methodological position also remains as a set of multifaceted concepts for several other issues. Some of these include the classification of "knowledge and human interests"; the analysis of "human action" and the processes of inquiries; and moral & aesthetic aspects.

It is to be noted that the above mentioned first and second methodological positions of Habermas are not covered here. Some aspects of the second position, though in a fragmentary fashion, are covered in chapter two. Rather, a further exploration of the third and some of the fourth positions is attempted. In so doing, the former (third) position is denoted as "Habermas's methodology and language processes" and the latter (fourth position) as "some of the multifaceted positions". The following sections are directed towards this end.

### 3.3.1 Habermas's Methodology and Language Processes

Habermas claims that an adequate understanding of the relationship between conceptions of rationality and corresponding conceptions of action needs a radical perspective. This is because, according to Habermas, "when a social scientist chooses a conception of action he also necessarily establishes the framework for a conception of rationality". It is through, White (1988) argues, a social theorist's implicit understanding of ontological assumptions about the possible relations between "actor" and "world" that such a conception can be reflected.

Habermas demonstrates these "world relations" by analysing three different conceptions of action and developing the corresponding models which, he believes, can facilitate an...
understanding of differing forms of 'rationality'. These models are: the teleological model, the norm-guided model, the dramaturgical model. A reason of categorising these three models is that these can prepare a ground that each of these conceptions is inadequate on its own as a framework to fully comprehend the cooperative dimension of action in Occidental capitalism.

To imagine a complete understanding of such a cooperative dimension of action, White (1988) argues, "an adequate perspective can only be constructed around his [Habermas's] communicative knowledge". However, in the following a brief account of such action models and their corresponding assumptions is given.

1. **Teleological Model.** White (1988) argues:

   According to Habermas, this model of action presupposes a relation between the actor and a world of "states of affairs", either presently existing or producible through action. The actor relates to this world both cognitively, through opinions about it, and volitionally, through intentions to intervene in it. These possible two relations to an objective world can be rationalised, respectively, according to criteria of "truth" and "effectiveness" or success [quoted from Habermas 1984]. The former criteria demarcate epistemic rationality while the latter demarcate practical rationality in the purposive sense [quoted from Habermas 1984]. In the latter case, the objective world includes not only physical objects and naturally occurring events, but also the intentions, strategies, decisions etc. of other individuals, to which the actors relate in an "objectivating" manner, that is, solely in terms of their bearing on the success or failure of that actor to manipulate states of affairs. (p37)

2. **The Norm-Guided Model.** White (1988) argues:

   In this model the actor can relate not only to an objective but also to a social world. "A social world consists of a normative context that establishes which interactions belong to the body of justified interpersonal relations" [quoted from Habermas (1984)]. Insofar as actors share such a context, they share a social world.

   The relation of action to social world allows rationalization in two senses, both of which Habermas subsumes under the concept of "normative correctness" or normative legitimacy [cited from Habermas 1984]. On the one hand, an action can be assessed in regard to how well it conforms to or deviates from an intersubjectively valid role or other norm. On the other hand, the validity of these normative expectations may itself be called into

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3 References here are to White who in turn quotes literally from Habermas [1984].
question. (pp 37-38)

3. The Dramaturgical model. White (1988) argues:

Here the focus is not specifically on how an individual pursues a strategy or follows a set of normative expectations, but rather on how the performance of any action reveals something about the actor's subjectivity. More particularly, in the performance of actions, an individual represents his subjective world in a specific way to an audience of other actors. This subjective world is "defined as the totality of subjective experiences" to which the individual actors "has privileged access" [cited from Habermas 1984]. This world of subjective experiences includes wishes, feelings, hopes, needs, etc, to which the subject can reflectively relate and selectively represent to others [cited from Habermas 1984]. One way in which this actor-subjective world relation is open to objective judgements of rationality is by assessing the degree of consistency which exists between what a subject expresses about himself in an utterance and his ensuing action; that is, "whether he means what he says, or whether he is merely feigning the experience he expresses". Rationalization here is thus measured in relation to a subject's "truthfulness" [Wahrhaftigkeit] or deceptiveness in relation to others. There is, however, another sense in which a subject's presentation of self can be rationally assessed: in terms of its "authenticity" [Authentizitat] [cited from Habermas 1984]. Here the assessment of consistency is directed primarily to the possibility of self-deception, that is, whether the feeling or need expressed is what one really feels or needs. (White 1988, pp 38-39)

Habermas distinguishes his communicative model from these other models and advances a distinctive way to coordinate action. Of course, he certainly understood communicative action as those actions that are "oriented to reaching understanding". What Habermas was particularly interested in here is how language can function as "a medium of unhindered understanding". Within this model, actors are conceived of as seeking an understanding about some practical situation confronting them, in order to coordinate their actions consensually. According to Habermas, reaching an understanding requires "a cooperative process of interpretation aimed at attaining intersubjectively recognised definitions of situations" (White 1988, p39). Perhaps this is a reason why White (1988, p36) argues, "Habermas focuses on language as a medium for coordinating action, that is, for producing subsequent patterns of interaction". White [1988] further argues that such a coordination can be seen occurring in more than one way. He also questions how precisely Habermas can see such action coordination is "coming about".
In fact, the kind of coordination that Habermas is interested in is only when actors orient themselves "to reaching an understanding". According to Habermas, it is this orientation which constitutes the category of *communicative action*, which has become a central concern throughout his (Habermas's) *The Theory of Communicative Action*.

As has been indicated earlier however, Habermas's theory of communicative action can neither be seen as a 'metatheory', nor, at the level of the individual researcher, be 'constructed in a methodological perspective' (McCarthy 1988, ppix-x). It is only at the level of social theory (and/or real actors) that such a framework can gain validity. Perhaps this is a reason why Habermas goes on to argue that social theory needs to be "concerned to validate its own standards". That is, it is through the language processes that real actors can better organise and coordinate their joint actions. For social scientists at the level of methodology, Habermas, thus, has marked a turn by advancing "the warning that methodology and epistemology are no royal road to social theory". Rather, according to Habermas, "questions concerning the logic of social inquiry can fruitfully be pursued only in connection with substantive question" (McCarthy 1988, pp ix-x).

Earlier, Habermas articulated three key stages of language processes through which, he believes, real actors can apprehend, organise and change their social life in a better way. Habermas (1973) articulated three such key stages of language processes: (1) the formulation of a critical theorem; (2) the processes of enlightenment; and (3) the selection of strategies. A reason why the early Habermas advocated such language processes is (probably) to provide some methodological corollaries to the real actors in organising their social life (in particular, he was interested in organising the political organisation rather than each aspect of "social life").

Using Habermas's view, Laughlin (1984, 1987) further explored how such a structure can be reflected in enhancing a critical understanding of accounting systems that operate in an organisational context. In so doing, Laughlin (1987) first drew some attention to the
nature of a 'critical theory' which originated in the German Social School of Frankfurt. He argues that "(c)ritical theory is a diverse and, to a certain extent, disparate set of ideas". Although these diverse sets of ideas have taken the forms of different paradigmatic positions, the general theme of these positions is still carried under the notion of (social) 'critical theory' as a general nomenclature instead of 'critical theories'.

Laughlin (1987, p482) advanced some of the major concerns of such theories, including:

The primary concern of all critical theories was, and still is, with a historically grounded social theory of the way societies and the institutions which make them up, have emerged and can be understood. Interpretation is never for its own sake but forms part of the important understanding which can allow some desired "transformation" of societies and their institutions. . . . This practical and critical concern with the change and development of societies and institutions indicates the role and significance of the theory for these writers: theory becomes the vehicle for an historically grounded interpretation and transformation to occur. [Thus,] (u)nderstanding is always to be related to the desired transformation.

This historical analysis, according to Laughlin (1987), "supplies not only the insights into the past but also the methodological tools for change in the future". Through its characteristic of 'permeability' (cf. Mehan and Wood 1975) 'critical theory' can create better methodological apparatuses for improvement (or change). This is supportive of Laughlin's (1987, p482) view that for critical theorists the account of the present is not a satisfactory state but rather a 'reality' that could be better than it is now.

Thus, it is suggested that critical theorists believe such a penetration is necessary to achieve a better 'state'. This is also envisaged in Habermas's conceptual shift from "communicative action" to "communicative sociation", to the debate of an 'aesthetic' dimension; where Habermas sees that this 'aesthetic' sense could be seen as permeating not

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4 As far as methodology is concerned there exists differences amongst the critical theorists (such as Adorno, Horkheimer, Marcuse, and Habermas), in the way they have advanced their theories on the nature of historical development [see Laughlin (1987) for such a discussion]; and these theories, therefore, form different paradigmatic positions, which also trace their roots back to various other social theorists such as Kant, Hegel, Marx, Durkheim and Weber.
only the need for interpretations, but also for moral-political judgements about the kinds of social institutions and technological infrastructure (White 1988, p152).

Laughlin (1987, p492) argues that "critical understanding is always coupled with transformation: it determines, in large measure, the nature of what constitutes acceptable interpretative explanations". By highlighting the potential benefits of a 'critical theory', Laughlin [1987] has also advanced some criticisms of it (see Laughlin 1987, pp482-483). An important criticism he has advanced is that (in the past) critical theory did not explicitly detail how a 'theory of change' can be seen as a pragmatic theory.

However, after reviewing the works on the nature of historical developments of the four key individuals of (social) critical theory (Horkheimer, Adorno, Marcuse and Habermas), Laughlin (1987) considered Habermas's methodological approach to further enhance its potentiality. He argues that "Habermas's model has the greatest potential both as a methodological approach for understanding and changing accounting systems design and for investigating social phenomena more widely" (p485).\(^5\)

To Habermas's three key stages, Laughlin [1987] has added one more stage, which he calls, a "quasi-ignorance" stage. By developing the early Habermas's concept of language processes, which he calls methodological stages, Laughlin (1987, p489) argues that this "can help understand and change the nature and interconnections of the (technical) accounting system and the various social factors which give it meaning".

The way in which Laughlin (1987) develops an interconnection at the methodological level of social scientists to do research utilising such language processes is as follows:

The "critical theorems" stage is where certain researchers attempt, through certain discursive processes, to expose the nature of these [possibly accounting systems technical roots and historical social roots] variables and their interrelationships. These insights are then taken to the primary organisational actors (who can in some sense be called the "researched" due to

\(^5\) A major interest here is the consideration of the former, that is, with the methodological approach that has been extended by Laughlin (1987) which follows Habermas's three key stages of language processes.
their likely involvement in the critical theorems forthcoming) who together with the researchers continue to explore the accuracy or inaccuracy (to them) of the nature and interconnections of the various insights gleaned in the "critical theorems" stage. This constitutes the next, "processes of enlightenment", stage. Finally the researchers and researched together, through further discursive processes, derive, in the light of the insights from the previous stages, strategies which are intended to lead to change and development in the accounting system and the social context and the interrelationships between the two. This is the "selection of strategies" stage. (Laughlin 1987, p489)

Laughlin (1987, p489) further argues that this "whole approach is a process which can be used for analysing and changing the nature of any accounting system, and its social context, of any particular organisation". In fact, such a theme of the early Habermas's language processes still occupy some of the major implicit positions in Habermas's later work. For example, from his theory of communicative action and, more recently, from White's (1988) interpretations of Habermas's recent work it is evident that Habermas, in the main, has focused on the coordination of action through following some "sociation principles". What this indicates is that these "sociation principles" cannot be reduced to the methodological corollary at the level of an individual researcher. Rather, according to Habermas, such processes can only be considered a methodological perspective for a real action situation (that is - at the level of real actors) through which the 'organisation of social life' can be carried out 'rationally'. In other words, at the level of real actors, through practical discourse (such as through language processes), they can apprehend, organise and change any situation that they need to in order for the constitutions of species (Held 1980).

The way Habermas inculcated such an idealised discourse however is not problem-free when we consider consensus (see Laughlin 1987). There is a possibility of disagreements which are deemed to be a blockage in making progress towards consensus. In other words, it is possible that the movement of reflection through such processes towards higher levels of generality and abstraction may "lead instead to an even greater instability of reference that will, as so often happens in the experimental situation of encounter groups, cause the participants either to drown in the new uncertainties they produce of else to fight over their
bitter harvest of incommensurate splinters of meaning" (Pusey 1987, p118). These are empirical questions and need considerations from an externalist point of view. A result of such movement of reflection would at least be to facilitate raising conflicting issues rather than just attempting to solve them through 'positivistic' calculations.

Although Laughlin (1987) has attempted to make a case as to how Habermas's language processes can be utilised at the methodological level of researchers (as a group - as he calls it), a question can be as to raised how an individual researcher can be a part of such processes. It seems logical to argue that in order to participate in such processes as a member of the group, each individual researcher needs to know about the 'body of knowledge' of the discursive subjects. In this sense, Laughlin's (1987) methodological approach deserves further attention.

It is this concern which leads to, and raises a question of how, a Habermasian methodological approach can be utilised from the view point of an external researcher. That is, how can an individual researcher be a part of such language processes? To answer this question attention is drawn to re-examining Habermas's earlier work on the topic of Knowledge and Human Interests. The following sections address some of the multifaceted concepts of Habermas's methodological positions and are directed toward this end.

### 3.3.2 Some Aspects of Multifaceted Positions

According to Habermas, the consideration of the problematic relationship between the notions of 'explanation' and 'understanding' is not only concerned with the methods and aims of the social sciences, but also their epistemological presuppositions.

Throughout, Habermas has attempted to bring social science research "under one roof" (McCarthy 1988) as against the 'dualism' within "social sciences". He certainly does recognise that the possibility of raising the question of 'dualism' of the sciences may exist when we distinguish the natural sciences from the social sciences, but not within the "social sciences" itself.
To focus on the "dualism" of the sciences, Habermas has drawn attention to past researchers. Habermas (1988) argues that it was Rickert who was the first to try to grasp the "dualism" of natural and cultural sciences in a methodologically rigorous way. He further argues that it was Rickert who attempted to reflect on the "dualism" of the sciences bringing in interesting aspects from Kant to Hegel. Thus, he goes on to argue that Rickert had accorded the same status to both the natural and cultural sciences, as against that of Cassier who made a clear separation between the two. Subsequently, it was Weber who had set the agenda but did not then show interest in the relationship between the natural and cultural sciences from an epistemological point of view, as did Rickert and Cassier (Habermas 1988, p10).

Although Weber conceptualised cultural sciences as a new social science with a systematic intent, Habermas (1988) argues, such a methodological advancement falls under "dualism". Habermas (1988, p12) argues that:

On the one hand, Weber always emphasizes the empirical-analytic task of using proven lawlike hypotheses to explain social action and make conditional predictions. From this point of view, the social sciences, like nomological sciences, yield information that can be translated into technical recommendations for the rational choice of means.

This leads Habermas to argue that Weber's emphasis might supply the "knowledge of the technique by which one masters life - external things as well as human action - through calculation". On the other hand, Habermas also realises that Weber's 'understanding of meaning' of social action through such knowledge-guided interest can do no more than open the way to the social facts. Thus, he goes on to argue that Weber has taken this position on the debate of the controversy over value judgements, "which gives a methodologically subordinate status to the hermeneutic intention of understanding meaning" (Habermas 1984, p13).

Habermas calls Weber's methodological dualism 'causal-analytic' and 'interpretive' methods. Habermas in fact did not reject Weber's "all aspects". Like Weber, for example,
Habermas has also attempted to bring explanatory and interpretive approaches "under one roof" (McCarthy 1988). One can also find Habermas's attitude to this from his clarification of Weber's unofficial version regarding the theory of action (see Habermas 1984, pp279-289).

In the official version, Habermas (1984, p 281) argues,

Weber distinguishes the types of purposive-rational, value-rational, affectual, and traditional action. This typology is based on categories of action goals to which an actor can orient himself in his purposive activity: utilitarian, value-related, and affectual goals. Then "traditional action" follows as a residual category that is not further determined. This typology is obviously guided by an interest in distinguishing the degrees to which action is rationalizable. Weber did not start from social relationship. He regards as rationalizable only through the means-ends relation of teleologically conceived, monological action.

If one adopts Weber's perspective, Habermas argues that "the only aspects of action open to objective appraisal are the effectiveness of a causal intervention into an existing situation and the truth of the empirical assumptions that underlie the maxim or the plan of action - that is, the subjective belief about a purposive-rational organisation of means" (Habermas 1984, p281). In other words, according to Habermas, Weber's concepts do not relate to the "linguistic medium of possible understanding" of meaning, but only "to the beliefs and intentions of acting subjects". Thus, Habermas goes on to argue that Weber "does not elucidate meaning in connection with the model of speech", which counts the fundamentals of interpersonal relations between acting subjects.

Habermas (1984, p280) further argues that "the concept of social action cannot be introduced by way of explicating the concept of meaning that Weber has advanced". Rather, his belief is that the model of purposive activity needs to be expanded "with two other specifications so that the conditions of social interaction are satisfied: (a) an orientation to the behavior of other acting subjects, and (b) a reflexive relation of the reciprocal action orientations of several interacting subjects" (Habermas 1984, p280).

Whilst elucidating Weber's unofficial version of action theory, Habermas (1984, pp
283-284) argues:

When Weber attempts to set up a typology on the conceptual level of social action, he encounters additional aspects of the rationality of action. Social actions can be distinguished according to the mechanisms for coordinating individual actions, for instance according to whether a social relation is based on *interest positions* alone or on normative agreement as well. It is in this way that Weber distinguishes the sheer facticity of an economic order from the social validity [Geltung] of a legal order. In the one case, social relations gain stability through the factual intermeshing of interest positions; on the other, through an additional recognition of normative validity claims.

Interaction based on *complementarity of interests* exists not only in the form of custom - that is, of insensibly accepted habituation - but also at the level of rational competitive behavior, for example in modern commerce, in which participants have formed a clear consciousness of the complementarity as well as of the contingency of their interest positions. On the other hand, interaction based on *normative consensus* does not only take the form of tradition-bound, conventional action; the modern legal system is dependent on an enlightened belief in legitimation, which rational natural law - in the idea of a basic contract among free and equals - traces back to procedures of rational will formation. This might have suggested constructing the types of social action (a) according to the kind of coordination and (b) according to the degree of rationality of social relationship.

Finally, Habermas argues that Weber's unofficial typology of action has not been carried out fruitfully for 'the problematic of social rationalisation'. This is where Habermas captures several aspects which have been developed through advancing the idea of *communicative action*. By *communicative action*, as against *instrumental* and *strategic action* which are oriented to success, Habermas (1984, p286) maintains it means "the actions of the agents involved are coordinated not through egocentric calculations of success but through acts of reaching understanding". Habermas goes on to argue that "(i)n communicative action participants are not primarily oriented to their own individual successes; they pursue their individual goals under the condition that they can harmonize their plans of action on the basis of common situation definitions" (p286).

According to Habermas, "knowledge is always related to human actions" (Lyytinen and Klein 1985). By examining the category of actions, Habermas demonstrates the interlocking of 'knowledge' with 'interests'. In so doing, Habermas (1978, p212) vindicates
the view that "interest is not external to knowledge". He also argues that "interests and actions are attached to each other in that they both establish the conditions of possible knowledge and depend on cognitive processes, although in different configurations according to the form of action" (p212). In fact, Habermas considered the theory of knowledge and human interests, as an attempt to set the foundation for a critical theory that would stand between *philosophy* and *science* (Pusey 1987).

In a later work, Habermas (1988, p14) put forward an argument that

The controversial relationship between the methodological framework of research and pragmatic function of applying the results of research can be clarified only when the knowledge-orienting interests invested in the methodological approaches have been made conscious.

If this is what Habermas wants to see occurring amongst (social) scientists, then we need to be more conscious about what we are doing and want to do. For example, this researcher wants to embark on a study to investigate contemporary accounting practice in a locale. In an endeavour to do so, thus far many attempts have been made to situate the theoretical stance and develop a framework using Habermas's critical approach. As part of this, throughout this chapter an attempt has been made to demonstrate how a Habermasian methodology can be utilised in investigating such a research question in an organisational context. As well, in order to explain the characteristics of the relationships of knowledge to interests from such a research point of view, that is at the methodological level of an individual researcher, a further apprehension is deemed necessary; which will be drawn in the following section using some aspects of Habermas's discursive thoughts on "knowledge and human" interests. This will be done by juxtaposing the aspects of knowledge and interests for "all sciences" and the "social sciences only".

3.4 *Aspects of Knowledge Interests Considering "All Sciences"*

In addition to the attempt to set the foundation for a critical theory (as has been indicated above), Habermas's theory of 'knowledge-guiding' interests can also be considered
as an attempt to elucidate the embeddedness of scientific research in "all sciences". By "all sciences" I am referring to both the 'social' and 'natural' sciences. Considering "all sciences", Habermas has categorised the underlying knowledge orienting "interests" into three kinds of knowledge-constitutive interests: "technical", "practical" and "emancipatory" interests.

Habermas's initial intention in undertaking this project, in the first place, was to break the positivistic connections between knowledge and interests (Pusey 1987). Such representations mostly occupy related texts, especially those which have dealt with Habermas's concepts (see Thompson 1981, Held 1980, Guess 1981, Roderick 1986, Pusey 1987, White 1988). Lyytinen and Klein (1985) also elaborated on such discussions. They recognised that knowledge interests can be utilised to determine 'the cognitive strategies that guide systemic inquiry', which provides them with the means of classifying the processes of such inquiries. Figure 3.1 is reproduced from Lyytinen and Klein (1985) to show their categorisation of different aspects of Habermas's knowledge interests which they develop for categorising IS (Information Systems) research.

The way in which Lyytinen and Klein (1985) have advanced these different 'aspects of knowledge interest' through this figure is elaborated below. By the Social Action Aspect, following McCarthy (1978) and Bernstein (1976), they articulate that it "reveals the connection between a type of social action and the knowledge interest with which it is associated" (Lyytinen and Klein 1985, p224). Following Habermas (1972), they argue that "the Mediating Elements Aspect suggests three 'real' world elements that underlie a specific knowledge interest" (p224). And by the Science Aspect they mean "how disciplines can be classified according to their underlying knowledge interest" (p224). By the Purpose of Inquiry Aspect, they (Lyytinen and Klein 1985, p224) mean that it "provides the reasons behind a knowledge interest inquiry" and "the Process of Inquiry Aspects gives the methodological framework of the inquiry". (All italics are mine).
### Figure 3.1  
**Aspects of Knowledge Interests**

<table>
<thead>
<tr>
<th>Knowledge Interest</th>
<th>Social Action</th>
<th>Mediating Elements</th>
<th>Sciences</th>
<th>Purpose</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Practical</td>
<td>Communicative Action</td>
<td>Cultural Institutions, Natural Language</td>
<td>Historical Hermeneutic Geisteswissenschafte</td>
<td>Understanding of Meaning, Expansion of Inter-subjectivity</td>
<td>Ideographic Method, Dialogue rules of Hermeneutics</td>
</tr>
<tr>
<td>Emancipatory</td>
<td>Discursive Action</td>
<td>Power Unwarranted Constraints</td>
<td>Critical Sciences, Psychoanalysis, Philosophy</td>
<td>Emancipation Rational Consensus, Mundgkeit</td>
<td>Reflective Method, Criticism of Assumptions</td>
</tr>
</tbody>
</table>

(Source: Lyytinen and Klein [1985,p224])

The way in which Lyytinen and Klein (1985, pp 224-225) articulate the three modes of principal classifications of inquiry: technical interest, practical interest and emancipatory interest, are as follows:

**Technical** knowledge interest is concerned with the efficient control of the 'physical' world. It is linked to the knowledge needs of purposive-rational action. This capability to control is acquired through learning, by observing the success or failure of deliberate interventions.

Disciplines that follow this knowledge pattern are natural sciences such as physics, and engineering, and systematic social science such as economics or operational research. All of these are interested in prediction and causal explanation. These sciences then: "disclose reality subject to the constitutive interest in the possible securing and expansion, through information, of feedback monitored action" (quoted from Habermas 1972).

Inquiry in the technical knowledge interest mode takes place through controlled experimentation in which hypotheses are verified or falsified. Methodological rules of inquiry are called 'scientific method'.

**Practical** knowledge interest is concerned with assisting historic understanding, both self understanding and understanding of others. This manifests itself through the communicative action of ordinary language (Berger, Luckman 1967). The ability to understand comes from the cultural socialization that produces accepted social norm and role expectations. The
disciplines which are concerned with this kind of knowledge are the historical-hermeneutic sciences. They include, history, anthropology, hermeneutic sociology (Winch 1958), and Wittgensteinian linguistics (Wittgenstein 1953, Austin 1962). These sciences are interested in clarifying meaning. They direct their attention at interpreting the meaning of texts and actions. Methodological rules of inquiry are called "rules of hermeneutics" and they attempt to create a dialogue between people trying to understand each other.

Emancipatory knowledge interest is related to our concern to have free, open communications and the conditions that enable these to take place (Bernstein 1976). This is the most fundamental knowledge interest because it deals with the substantive and normative aspects of human life, our destiny as a human species. It describes what ought to be the aim of our study of social systems and of social action. It unites the two other knowledge interests and provides a mean for investigating how they relate to each other and their dynamics. Examples of sciences dealing with this kind of knowledge need are social science when it takes a critical view of social institutions, psycho-analysis when it is dealing with our inner compulsions and distortions, philosophy when it deals with the validity of our knowledge etc. The purpose of such inquiries is our emancipation. People are released from intellectual and social domination and grow to intellectual maturity, which is characterised by autonomy and responsibility, called Mundigkeit. The process of inquiry is primarily reflection, with an uncovering of false beliefs and distortions and a careful criticism of these. Emancipatory knowledge interest is related to discursive communicative action. Participants look for the justifications of arguments and test their validity.

Pusey (1987, p23) argues that "Habermas has no wish to protect bad science and he certainly wants imperfect knowledge to be corrected with better scientific observation where that is appropriate". Also, if Habermas intended to see the non-dualism within social sciences, then we can raise several questions. For example, does Habermas provide any such categorisation of 'knowledge interests' only for social science research and its corresponding characterisations? This is a crucial question and needs further analysis. That is, how can a Habermasian approach be used in understanding 'social science research'? This leads to the following discussions, that is, a consideration of only the "social sciences" as opposed to "all sciences".

3.5 Aspects of Knowledge Interests Considering only "Social Sciences"

Here again, one may ask what leads a science to be called a "social science"? It is an
understanding that a science which is constituted at least partially, by some account of subjectivity or human agency, is a "social science". It is not a question of how one can derive an account of subjectivity [which can be derived in more than one way (White 1988)]. Rather, the argument is that a social science research programme must be constituted by some account of subjectivity or human agency. For example, White (1988, p5) argues that "rational choice theory develops an account of a subject which does indeed build upon the tradition in which each agent inhabits a monological world of cognition and volition". On the other hand, White (1988, p5) argues, Habermas "constructs an account of subjectivity which is derived from his analysis of the structures of intersubjectivity implicitly pre-supposed by ongoing interaction".

However, with the redirection of my focus from all sciences to the social sciences, as has been indicated above, it is possible that there is a need for a further attention in making sense of conducting social science research than what has been advanced by Lyytinen and Klein (1985) for all sciences. In an attempt to further elaborate this discursive argument, an alternative representation of the categorisations of knowledge-orienting interests and their corresponding characterisations, as opposed to the presentation made by Lyytinen and Klein (1985), is presented below (see Figure 3.2).

A reason for such representation is that it (ie, the representations of Lyytinen and Klein 1985) obscures delineating social science research (say management accounting research) as being "under one roof". In particular, the problem arises when a consideration of "technical interest" and its corresponding aim and process of inquiries has emerged. The equivocality between "what is technical" and "what is non-technical" leads to the problem of whether the "technical" means non-social and the "non-technical" means social. Arguably, this controversy has divided many contemporary researchers/academics, of course reluctantly, and leads one to argue that the "dualism" of sciences is the only proposition that can ultimately provide a solution for such a division.
Latour & Woolgar (1979) have dealt with such a distinction. They emphasise that concentration on social in contradistinction to technical could lead to the disproportionate selection of events for analysis which appear to exemplify mistaken or wrong science. Latour & Woolgar (1979, p29) urge that this "together with our (their) desire to avoid adopting the distinction between technical and social leads us (them) to what might be regarded as a particularly irrelevant approach to the analysis of science" (italics are mine).

In a later work, Latour (1987, p33) argues that

The difference between technical and non-technical literature is not that one is about fact and the other about fiction, but that the latter gathers only a few resources at hand, and the former a lot of resources, even from far away in time and space.

Latour (1987, p62) goes on to argue that

The more technical and specialised a literature is, the more 'social' it becomes, since the number of associations necessary to drive readers out and force them into accepting a claim as a fact increase.

Habermas has classified action into the domain of "social" and "non-social" to clarify the problematic process of societal rationalisation. A clear-cut boundary of such classification of these two notions is to be found in his book The Theory of Communicative Action. Habermas [1984, p285]) notes that

We call an action orientation to success instrumental when we consider it under the aspect of following technical rules of action and assess the efficiency of an intervention into a complex of circumstances and events. We call an action oriented to success strategic when we consider it under the aspect of following of rational choice and assess the efficacy of influencing the decisions of a rational opponent.

Like Habermas's classification between 'purposive-rational action' and 'communicative action', the classification of technical knowledge-orienting interest and practical knowledge-orienting interests also has a problematic status. The former has been seen by many who have further elaborated Habermas's work (see Thompson 1981, Held 1980, Roderick 1986 for such explanations). These authors have seen "technical interest" as "technical enquiry"
which is considered together with a process of "scientific method" (which Habermas calls "empirical-analytic" science). Of course, Habermas himself has advanced such a position to clarify the knowledge-orienting interests considering "all sciences" together.

**Figure 3.2**

Some Characterised Relationships with Knowledge and Interests - at the Level of an Individual Social Science Researcher

<table>
<thead>
<tr>
<th>Knowledge Interest Type</th>
<th>Mediating Elements &amp; Social Action</th>
<th>Aim of Inquiries</th>
<th>Process of Inquiries &amp; Sciences</th>
<th>Pragmatic Relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>Work systems (Purposive-Rational Action, etc)</td>
<td>Body of Knowledge (Technical knowledge)</td>
<td>Field Study (Interviewing, Anthropological Inquiry, etc)</td>
<td>Direct</td>
</tr>
<tr>
<td>Practical</td>
<td>Interactive Activities (Communicative Action)</td>
<td>Body of Knowledge (Understanding of Meaning)</td>
<td>Field Study (Interviewing, Anthropological Inquiry, Hermeneutic Sciences, etc)</td>
<td>Direct</td>
</tr>
<tr>
<td>Emancipatory</td>
<td>Power/Unwarranted Constraints (Discursive Action)</td>
<td>Emancipations</td>
<td>Discourse (Critical Social Sciences)</td>
<td>Indirect</td>
</tr>
</tbody>
</table>

Thus, consideration of such a categorisation, "technical" and "practical" or "technical" and "non-technical", may not be useful, as far as the processes, purposes and sciences are concerned, especially for the interest of a technical 'body of knowledge', which Habermas has categorised as "technical interests" in order to include "all sciences". At the level of individual researcher, there is a need to reconsider such categorisations. In Figure 3.2, a presentation is made by advancing some alternative typologies of knowledge interests and their respective characterisations under the four categories of 'mediating elements and social action', 'aim of inquiries', 'process of inquiries & sciences', and 'pragmatic relationships'.

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6 It is to be noted that I have taken some of the typologies that have been developed by Lyytinen and Klein (1985), but I do not claim that all their classifications are conclusive, at least if it considers social sciences only.
An understanding here is that one must not equate "technical knowledge interest" within the "social sciences" with the notion of "technical enquiry". The latter term may be suitable for natural sciences such as physics and engineering (Lyytinen and Klein 1985). For "social sciences", the meaning of "technical interest" needs to be re-read as interest in collecting or gaining a "technical body of knowledge" in order to perform practical "discourse", or for pre-theoretical preparation. From the viewpoint of real actors, the production of this knowledge is constitutive, because it is real actors who constitute their reality when they encounter problems in their efforts to produce their existence and reproduce their "species being" (Held 1980, p25).

It is either to perform practical discourse or pre-theoretical preparation (as mentioned above), that a social scientist needs to collect a body of knowledge (ie, knowledge about work systems, purposive rational action, machines, inscriptions, etc) through field studies. The "pragmatic relationships" between researcher and "researched" for the purpose of such enquiries also needs to be considered as direct, in an anthropological (or ethnomethodological) sense. That is, in order to collect a "body of knowledge" regarding any technical or social roots of accounting, a researcher needs to come closer to the "researched". In a similar fashion, it can be argued that knowledge regarding "understanding of meanings" (of course - at the pre-theoretical level) needs to be reified through conducting field studies. In this case also, the pragmatic relationship between researcher and "researched" needs to be considered as a direct relationship.

According to Habermas, from the viewpoint of a social scientist[s], the final task always depends on an emancipatory interest which can only be made reflective through "discourse" (or through critical social sciences) and only "indirectly". Certainly, such "discourse" cannot be done in a value-free way. The final 'understanding of meaning' is

---

7 Here field study is used as a general notion, no distinction is made between case studies, field studies or fieldwork (cf. Ryan et al 1992, Booth 1991). At the extreme, this could be related to Feyerabend's (1975) concept of "anything goes". However, at this stage it is a question of how to make sense of the methodical discretion, which is an agenda to be elaborated in chapter four.
dependent upon the conclusions that are to be drawn by the "researched" or on reflections through "emancipation" in a *therapeutic* sense.

In the previous discussions, attention has been directed towards knowing both the technical and the practical body of knowledge, instead of locating them as two separate traditions of research. However, to demonstrate these arguments one can take examples from the nature of the "technical body of knowledge" in (management) accounting that may well include the following in an organisational setting:

a. issues of controlling production processes for efficiency and effectiveness including the identification of costs, material requirement planning (MRP), production scheduling and capacity planning;

b. analyses of sales by establishing prices, profitable lines, costs distribution and inventory levels;

c. identifications of plant locations for a diversified company, investment analyses, and solving transportation problems;

d. use of statistics to grapple with profits, costs, sales, cash flow and share market variations, to financial statement analyses, to analysing public expenditures and revenues in the case of government accounting;

e. analyses for pessimistic and optimistic calculations;

f. analyses of the applicability of costing methods under new technological innovations (Eg. JIT, CAM, CAD, CAE); and technical analyses of transfer pricing problems and budgeting.

g. costs and other bodies of technical knowledge for strategic cost analysis;

h. body of technical knowledge of information (computer) technology for designing integrated cost management system, and so on.

The purpose of citing these examples here is to demonstrate that it would be misleading if we were to ascribe to this a body of 'technical knowledge' which can be produced by the
"technical inquiry" of "positivists". We doubt such knowledge can be acquired in a value neutral way, that is, through the use of the positivistic methods. "Positivism" fails to reflect both on this technical interest, which informs sciences, and to differentiate these orientations from practical interests.

In order to use these as a 'body of knowledge' for practical purposes or for change to any accounting systems and its social roots, there is a need for an "internal colonisation" (cf. Broadbent et al, 1991) or "implementation", in its first order sense (see Laughlin 1991). To make use of this knowledge in a second order sense, it is the real actors who can adopt what Laughlin (1991) calls an "interpretive schema".

For the purpose of 'explanation' and 'understanding' such a body of knowledge [ie, both technical (not technical enquiry) and practical] can be considered as a "necessary condition but not a telos or sufficient condition" (Habermas 1978,1987). The sufficient conditions of 'explanation' and 'understanding' is dependent upon the ultimate agenda of what Habermas calls 'emancipation' (or reflections).

Here, it should be kept in mind that, although this technical body of knowledge and 'understanding of meaning' (that is, 'practical' in the sense as has been advanced here) might have its roots in the social (society) as a whole not all of them need equal attention in the sense of a Habermasian 'rationalisation' debate (see White 1988, p102). Of course, for pedagogic and epistemological reasoning such knowledge-gain needs to be made public via theoretical discourses for universalising relations (or otherwise), which can still be categorised as an 'emancipatory' interest. Arguably, Habermas might see, more or less, that 'emancipation' through discourse is necessary for knowledge-orientation which has 'transcendental status' to a greater degree. Thus, it can be argued that it is through this 'emancipatory' interest, a social science researcher can explicate, reconstruct, and (even) deconstruct the meanings that go beyond those intended (perceived) by the real actors or which are embedded in traditions.
On the level of an individual researcher, although Habermas's methodological position is blurred in respect of the first two levels of knowledge-orienting interest - that is, 'technical' and 'practical' knowledge types - he has however opened a position for social scientists, that is, the knowledge-orientation for emancipatory interest. In this sense, one may consider the 'methodological issues' in management accounting research itself as a topic of "emancipatory" interest. Similarly, theorising social issues of accounting can also be viewed as an emancipatory topic in that such theorising is always dependent not only on 'explanations' and 'understanding of meanings', but also on "final analysis" or "reflections" in a therapeutic sense.

3.6 Conclusion

Habermas has neither talked specifically about accounting, nor provided any methodical structure of how to investigate a context of accounting. Despite doubts about Habermas's programme and its profound implications for accounting (see Arrington and Puxty 1991), on the other hand, the consideration of his notion of 'emancipatory interest' (only) at the methodological level, as has been advanced in this chapter, can be considered a potential theoretical advancement in making sense of the doing of research on accounting-in-action. For example, it is argued that it is either to perform practical discourse or pre-theoretical preparation that a social scientist (external researcher) needs to collect a body of knowledge [both the "technical" (work systems, purposive rational action, machines, inscriptions, etc) and "practical" (understanding communicative action and meanings)] through field study (or otherwise). Then, after gathering the "empirics" (both the technical and practical knowledge types), the final task of a social scientist is to represent them (empirics) to the public by way of emancipatory discourse. This is what I referred to as, from the viewpoint of an external researcher, an "emancipatory interest".

Moreover, Habermas's inculcation of a hypothesis such as "the linguistification of the sacred can facilitate the rationalisation process of the lifeworld" (see chapter two) has
attracted this researcher to develop a methodological corollary of the study. In other words, it means that an increasing 'linguistification' of "multiplicities" (both "technical" and "practical" knowledge types) from contexts by representing them to the public (including fellow colleagues) by way of including the writing of history, analysing and theorising (or otherwise), may be a way of enlightening the information seeking societies (both the Western and non-Western). To Habermas, this linguistification is not just a syntactic or semantic analysis, but rather an unveiling of the language-in-use in any real action situation (for instance, accounting-in-action). This is what led this researcher to select and obtain access to a micro-organisation (ie, the researched organisation) on which the investigation of contemporary practice of management accounting (or otherwise) could be carried out. How such access was obtained and how data or information was collected and so on, are issues of "methodical discretion" which are discussed in the following chapter.
Chapter Four
Methodical Discretion & a Way Out

4.1 Introduction

I concluded the previous chapter with the argument that Habermas has not provided any "methodical discretion" of how to investigate a phenomenon. Rather, he advanced a range of meta-level concerns including an hypothesis that 'linguistification of the sacred facilitates the rationalisation process of the lifeworld'. In particular, Habermas's thesis on the rationalisation process of the reproduction of 'lifeworld' is an exemplar for this (see chapter two - section 2.5). However, Habermas has neither interest nor agency in the micro-aspects of the 'methodical discretion' or 'methodical rules' that an individual researcher may face in investigating a phenomenon and then representing (writing up) the collected body of knowledge (the empirics). On the contrary, this is not to claim that Habermas did not provide any methodological corollary. In particular, such exemplum could be found in Habermas's early preaching of the 'language processes' and his later advancement of the 'communication model' (see chapter three).

As mentioned earlier, this study assumes that the roots of other meaningful, yet uncertain, social and political considerations of the actual functioning of accounting are in organisation(s). Therefore, at the level of 'action-orientation', organisational analysis of accounting is seen as a primary research agenda. Particularly in chapter three, by juxtaposing differing types of knowledge interests, it is argued that in order to perform practical discourse at an 'emancipatory level' for such contexts, the researcher (a social scientist) needs to collect a body of knowledge - both technical (knowledge about work systems, purposive rational action, machines and inscriptions) and practical (understanding of meanings) through 'field study'. Although such a suggestion regarding 'field study' can be seen as a major shift from a positivistic research program, the project remains unanswered in many respects. For example, there is no answer for what could be a 'way out' in regards to the 'methodical discretion' in carrying out, analysing and writing up (mode of
representation) of a 'field study'. What could be the way into a context? What context is to be investigated? What problems are to be looked at? Knowledge for what? Knowledge for whom? The intention of this chapter, however, is not to analyse various riddles of the different perspectives and thoughts on the 'methodical' debate. Rather, in the earlier sections of the chapter, the focus will be on some contemporary non-positivistic 'ethnographic' works which investigate 'science and technology' in the making, especially the work of Bruno Latour and that of his colleagues. In the later sections, an account of the differing processes (methods) used in my 'field work' will be outlined. Later sections also detail how serendipity patterns of investigation made this researcher re-constitute the research question(s), and hence the thesis topic.

4.2 Is Field Study a Common Banner?

There are various nomenclatures for "field study". It is used synonymously to refer to a style of investigation such as 'field work', 'qualitative method', 'interpretive method', 'case study', and 'ethnography'. Despite the existence of the different labels, the epistemological foundation of a 'field study' approach "has traditionally been associated with social anthropologists whose 'field' consisted of a small-scale society where it was possible to do 'research' by living and working among the people" (Burgess, 1982, p1); or, the "peculiar practice of representing the social reality of others through the analysis of one's own experience in the world of these other" (Van Maanen, 1988, p ix). These views suggest that the main instrument in 'field study' research is the researcher himself or herself, who has to learn the local languages (if necessary), live among the people and participate in their activities over a relatively long period of time.

Burgess (1989) argues that 'field research cannot be fitted into a linear model of steps or stages, for a field researcher has to cope with a variety of social situations, perspectives and problems'. Doing field research, therefore, according to Burgess, is 'not merely the use of a set of uniform techniques but depends on a complex interaction between the research problem, the researcher and those who are researched'. To him 'it is on this basis that a
researcher is an active decision-maker who decides on the most appropriate conceptual and methodological tools that can be used to collect and analyse data'. "Field research is concerned with research processes as well as research methods. Field research methodologists, therefore, have focused on issues involved in starting research, gaining access, selecting informants, and handling ethical problems as well as collecting, analysing and reporting data" (Burgess, 1989, p6).

Schatzman and Strauss (1973, p14) argue that "field method is more like an umbrella of activity beneath which any technique may be used for gaining the desired information, and for processes of thinking about this information". Field study research covers a diverse range of methods, strategies and tactics (Burgess, 1982). It is the researcher who has to consider ways in which different methods can be used in collecting data and then to address a variety of theoretical and substantive research issues. The literature on the methodical prescriptions of field study is vast; there is extensive literature for conducting field study such as how to obtain a way in or get access, how to go about field research, and so on. Although much has been written about how to conduct a field study, relatively little is available in the accounting arena on how to represent the outcome of a 'field study' addressing a particular (non-positivistic) theoretical perspective.

Burgess (1982) argues that the theoretical framework is of paramount importance, as this will influence the questions that are posed and the data collected by the field researcher. He further argues that the data that is gathered by the field researcher is shaped by the themes that emerge during the investigation. This is possible if researchers consider themselves as "travellers" rather than "tourists" (see Preston and Mouck, 1993). To be a traveller, an essential element is the training in sociology and anthropology. Preston and Mouck (1993, p22) argue that the researchers as travellers enter into the research site with no pre-conceptions about its reality and they are concerned with creating and subsequently provoking ideas. They further go on to argue that "rather than closing down competing discourses through establishment of facts, research in the spirit of a traveller is concerned..."
with opening up the universe of discourse by producing multiple readings of social action and organisational life" (p22).¹

There is no doubt that field study involves 'observing and analysing real-life situations', of studying actions and contemporary activities as they occur (Powdermaker, 1966), but there appears tensility amongst social scientists (including critical accounting researchers) in the use of the term field study under a common banner (see Preston and Mouck 1993). For example, anthropologists and the like (the school of sociology of knowledge) generally use either 'field work' or 'ethnography' to refer to the modality of field research more than other labels.

There has been a plethora of accounts, now available in accounting research, of the methodological prescriptions of "field studies" (cf. Ryan et al., 1992; Ferreria and Marchants, 1992; Booth, 1991; Kaplan, 1983, 1986). These researchers also use the term "case studies" to refer to "field studies" with the exception of Robert Kaplan whose preferred label is case study. Few of these studies recognise that their accounts of methodological prescriptions have anthropological or epistemological foundations.

Using Pratt's (1992) rhetoric - 'contact zone', Preston and Mouck (1993, p5) argue that "the case study (research) like the tourist site becomes a kind of 'contact zone' between two research cultures (paradigms)". They further argue that "the case study researcher's home lies in the realist ontological view of accounting and organisational phenomena and rests upon the principles of empiricist natural science research"(p6). There emerges a tense set of relationships within which they call the 'contact zone' of the two research 'cultures', that is, positivistic case study and ethnography.

¹ However, it seems that for a traveller 'going out' is always fascinating. The question remains - how much can s/he travel? When coming back home what can s/he do? Should they improve their home on return? Or, should they leave the old home and build a new home? All these questions have paradoxical features. Again, one can be a traveller for their whole life without returning home - provided s/he can afford the travel.
According to Preston and Mouck (1993), certain groups of accounting researchers (ie, Kaplan, 1983, 1984, 1986; Ferreria and Marchants, 1992) deliberately (ignorantly may be a proper word) reconstitute case study research as another form of positivist research, without synthesising the epistemological foundations or roots of case study research. They (Preston and Mouck, 1993) suggest an analogy, 'those who subscribe to these views on science [case study research] feel more or less at home'. Booth (1991, p128) argues that "positivistic 'case study' researchers tend to view 'case studies' as either illustrative of 'good' accounting practices or exploratory in that they provide a more grounded basis for future model building and hypothesis formation". 'This view flows from the unquestioning acceptance of neoclassical economics based assumptions about the role of accounting in organisations (Scapens 1990)'. But, according to Preston and Mouck (1993), ethnographic studies are premised upon a very different set of methodological, epistemological and ontological assumptions.

Most (if not all) accounting academics who suggest that the 'case study(ies)' is (are) another form of research, have ignored considering its founders' discipline - anthropology. Anthropologists or ethnographers have spent over a century accounting for it, not only linking its modality - 'ethnography' (either classical or new form) - to theoretical and epistemological underpinnings but also to a range of representational styles, vocabularies, and rhetoric. Despite the fragmented diversity amongst anthropologists (both classical and new), "what seems to define the centre in this eclectic time is the ongoing experimentation with semiliterary genre of anthropological discourse - the ethnography - which is where the locus of intellectual energy in the discipline now seems to be" (Marcus, 1986, p5). Thus, in the following, attention will be drawn to this discourse on 'ethnography'. However, the intention here is not to analyse or answer the various riddles of differing sectional interests within anthropology about 'ethnography'. Rather, a major interest is to draw attention to some contemporary (non-positivistic) 'ethnographic' works, especially that of Latour (1987) and Latour and Woolgar (1979) and some of the works of their colleagues.
4.3 Ethnography - A Methodical Discretion

Within anthropology, in recent times, ethnographic field-work and writing have become the most lively current arena for theoretical discussion and innovation. "Ethnography's concern is with description, and present efforts to make ethnographic writing more sensitive to its broader political, historical, and philosophical implications place anthropology at the vortex of debate about the problem of representing society in contemporary discourses" (Marcus, 1986, pvii).

There are many critical views of 'ethnography' amongst ethnographers. Selecting any authority on ethnography is a difficult job because there exists such diversity in ethnographical writings and theoretical frameworks. It is not only a daunting task but also there is a need to pay careful attention to the researcher's time and space, in order to advance a balanced discourse on the subject. However, before drawing attention to the works of technoscientists, that is - the work of Bruno Latour and others, an understanding of 'ethnography' by Clifford Geertz, who is considered to be modern but with some remnants of a "past fashion" ethnographer, is advanced. The consideration of the work of Geertz and his account of ethnography is to point out that there may exist tension amongst ethnographers (both modern and post-modern) in respect of what might constitute "ethnography".

An Understanding of Ethnography by Geertz

In Works and Lives: The Anthropologist as Author, Geertz (1989, p133) writes, "[i]ndeed, the very right to write - to write ethnography - seems at risk". Geertz (1989, p16) argues that "[e]thnographers need to convince us not merely that they themselves have truly "been there", but (as they do, if rather less obviously) that had we been there we should have seen what they saw, felt what they felt, concluded what they concluded". He

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2 A selection of the works of Latour and his colleagues for enhancing a reflective understanding of "critical ethnography" is undertaken based on the recent claims introduced by accounting researchers (cf. Cooper 1990, Robson 1991, 1992; Preston et al, 1992; Chua 1993)
argues that "getting themselves [ethnography writers] into their text (that is, representationally into their text) may be as difficult for ethnographers as getting themselves into the culture (that is, imaginatively into the culture)" (p17).

Geertz writes that "[t]he transformation, partly juridical, partly ideological, partly real, of the people anthropologists mostly write about, from colonial subjects to sovereign citizens, has altered entirely the moral context within which the ethnographical acts takes place" (1989, p132). He argues further that "[o]ne of the major assumptions upon which anthropological writing rested only until yesterday, that its subjects and its audience were not only separable but morally disconnected, that the first were to be described but not addressed, the second informed but not implicated, has fairly well dissolved" (p132). Thus, he goes on to argue that "the moral foundations of ethnography have been shaken by the decolonization on the Being There side, its epistemological foundations have been shaken by a general loss of faith in received stories about the nature of representation, ethnography or any other, on the Being Here side" [italics are mine] (p135).

In a chapter "Being There", Geertz begins his book, *Works and Lives: The Anthropologist as Author*, with the following paragraphs:

The illusion that ethnography is a matter of sorting strange and irregular facts into familiar and orderly categories - this is magic, that is technology - has long since been exploded. What is instead, however, is less clear. That it might be a kind of writing, putting things to paper, has now and then occurred to those engaged in producing it, consuming it, or both...

What a proper ethnographer ought properly to be doing is going out to places, coming back with information about how people live there, and making that information available to the professional community in practical form, not lounging about in libraries reflecting on literary questions. Excessive concern, which in practice usually means any concern at all, with how ethnographic texts are constructed seems like an unhealthy self-absorption - time-wasting at best, hypochondriacal at worst...

Another objection, here coming mostly from the consumer side, is that anthropological texts are not worth such delicate attention... Good anthropological texts are plain texts, unpretending. They neither invite literary-critical close reading nor reward it.

But perhaps the most intense objection, coming from all quarters, and indeed rather to intellectual life these days, is that concentrating our gaze on the ways
in which knowledge claims are advanced undermines our capacity to take any of those claims seriously. Somehow, attention to such matters as imagery, metaphor, phraseology, or voice is supposed to lead to a corrosive relativism in which everything is but a more or less clever expression of opinion. Ethnography becomes, it is said, a mere game of words, as poems and novels are supposed to be. Exposing how the thing is done is to suggest that, like the lady sawed in half, it isn’t done at all. (1989, pp1-2)

Geertz (1989) is also careful to state that "these above views are unreasonable, because they are not based on the experience of threats present and actual, or even looming, but on the imagining of possible ones that might occur were everything to be suddenly otherwise than it now is" (p2).

To Geertz, "[a]nthropologists are possessed of the idea that the central methodological issues involved in ethnographic description have to do with the mechanics of knowledge - the legitimacy of "empathy", "insight", and the like forms of cognition; the verifiability of internalist accounts of other peoples’ thoughts and feelings; the ontological status of culture. Accordingly, they have traced their difficulties in constructing such descriptions to the problematic of field work rather than to those of discourse. If the relation between observer and observed (rapport) can be managed, the relation between author and text (signature) will follow - it is thought -of itself." (Geertz, 1989, pp9-10)

Geertz is also sceptical about defining ethnography in terms of techniques such as establishing rapports, transcribing texts, taking genealogies, mapping fields, keeping diaries. Geertz argues that it is not these things - techniques and received procedures, that define the enterprise of anthropological ethnography. Rather, what defines it, as argued by Geertz (1973, p6), is the kind of intellectual effort to come up with "thick description". According to Geertz, it is by representing this "thick description" that an ethnographer enables his/her audience to appreciate the art and rhetoric, the art and tactical creativity of actors in their various manipulations.

Geertz argues that

...ethnographies tend to look at least as much like romances as they do like lab reports (though, as with our mule, not really like either), two questions, or perhaps the same one doubly asked, immediately pose themselves: (1) How is
the "author-function" made manifest in the text? (2) Just what is it - beyond the obvious tautology, "a work" - that the author authors? The first question, call it that of signature, is a matter of the construction of a writerly identity. The second, call it that of discourse, is a matter of developing a way of putting things - a vocabulary, a rhetoric, a pattern of argument - that is connected to that identity in such a way that it seems to come from it as a remark from a mind. (1989, pp8-9)

Despite the above views by Geertz, which are critical of ethnography, there is a wide range of interpretive research which uses 'ethnography' as a methodical discretion in conducting and representing (writing up) 'field work'. Such studies are based on differing theoretical perspectives. An example of such an account is that by the technoscientists, especially in the work of Bruno Latour and his colleagues. It is claimed that the most promising contributions of the works of Bruno Latour and his colleagues are not only concerned with the methods for production of passive human agents but are also concerned with the methods for 'reduction of discretion' - that is, 'interpretive flexibility' (cf. Law, 1986). As intended, therefore, in the following, attention will be drawn to some of the work of Latour (and his colleagues) who has attempted to investigate 'science-in-action' (Latour, 1987), and has shaken not only the classical position of the ethnographer by writing "critical ethnography" but has also advanced some theoretical and methodological underpinnings for studying 'science-in-action'.

4.4 Technoscientists' Approaches to Studying 'Science in Action'

The term 'technoscience' is coined by Latour to emphasise his association with, and convergence on, a sociological tradition known as 'science and technology studies'. The most prominent authors within this area of 'science and technology studies' include: Donald Mackenzie, Judy Wajeman, Steve Woolgar, Trevor Pinch, Wieber Bijker, Thomas Hughes, John Law, Michel Callon and Bruno Latour.

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3 Although the adjective 'critical' in critical ethnography has recently been coined by Power (1991) in the accounting literature, it is Chua (1993) who has introduced the terminology to a Latourian literature. Perhaps an implicit objective of such introduction is to distinguish other forms of 'ethnography' - that is to establish a non-positivistic methodical discretion which should provide a much more interpretive flexibility in representing the others (organisation of social life) manipulations as well as play a distinct role (in regard to tactics, tribulations, tools, rhetoric, etc) in representing contextual reality in a self-reflexive manner.
"There is a wide range of studies of technology and its relationship to society" (Preston et al, 1992, p563). However, the work of Latour (1987) and Latour and Woolgar (1979), in particular their use of rhetorical vocabularies and 'reduction of discretion' in conducting and representing a 'field work' on 'laboratory life', is worth considering. These works, and that of Callon (1986) and Law (1986) and their colleagues at the Ecole Des Mines in Paris, have not only shifted the direction of imagining the shaping of 'science (facts) and technology (artefacts)' per se, but have advanced various rhetorics, 'language sets' and approaches, including the concept of 'actor-networks' or 'sociology of translation', and various 'methodical discretions' in investigating and representing 'science-in-action' as opposed to 'ready made science'.

Latour (1987, p29) argues that "the construction of facts and machines is a collective process". "This collectivity is a network of actors, each playing a part in the unfolding of events" (Cockburn 1992, p33). In other words, it can be argued that through a constitutive process this collectivity (of course the human actors only) treats every process of action-orientation as a learning process, thus, allowing for a reproduction of the 'lifeworld' (Habermas, 1987) in a more conscious way and becomes enabling. Obviously, such a constitutive process is dependent on 'the stock of knowledge' (what Habermas calls 'culture' - a component of 'lifeworld') that the collectivity (actor-networks4) posses at particular points of time and space (see chapter two -section 2.7). It is from this cultural background that the participants supply themselves the requisite impetus in communicating amongst allies with interpretations as they come to an understanding about something [both facts (science) and artefacts (technology)] in the world.

Unlike Habermas's (1979) classifications of the orientations of sciences ("knowledge interest") - 'technical', 'practical' and 'emancipatory' (see chapter three), the technoscientists' focus on science is from two different orientations. That is, the 'technological determinism' and the 'social', which they relate to two different models, that is, "the diffusion model" and

4 Only human actors, not the non-human actors.
"the translation model". To focus on these orientations, Latour (1987, p4) draws on two distinctive types of science; one of which he calls 'ready made science', and the other 'science in the making' - and which he refers to as the 'two-faced Janus' of science. This is reflective of his comparison between the diffusion model and the translation model. Latour argues:

It appears that power is not something one can posses - indeed it must be treated as a consequence rather than as a cause of action. In order to explore this paradox a diffusion model of power in which a successful command moves under an impetus given it from a central source is contrasted with translation model in which such command, if it is successful, results from the actions of a chain of agents each of whom 'translates' it in accordance with his/her own projects. (1986, p 264)

Latour (1986) relates this diffusion model to the 'inertia' principle of physics. He states that "according to the inertia principle token [objects] will move in the same direction as long as there is no obstacle" (p267). According to Latour, within this 'diffusion model' there are three elements which spread objects through time and space: "the initial force that triggers the movements and which constitutes its only energy; the inertia that conserves this energy; and the medium through which the token circulates". In contrast to the diffusion model, Latour (1986) advocates that in the 'translation model', first, 'there is no inertia account of the spread of a token'; and secondly, the 'social action' is seen as a continuously 'transformative' process. To support this, Latour expounds that

When no one is there to take up the statement or the token then it simply stops... The initial force of the first in the chain is no more important than that of the second, or the fortieth, or the four hundredth person... If you want the token to move on you have to find fresh sources of energy all the time; you can never rest on what you did before, no more than rugby players can rest for the whole game after the first player has given the ball its first kick. (1986, p267)

Thirdly, he proclaims that the chains of actors are actively participating (performative rather than ostensive) in the shaping of facts and artefacts. He writes:

Each of the people in the chain is not simply resisting a force or transmitting it in the way they would in the diffusion model; rather, they are doing something essential for the existence and maintenance of the token. In other words, the

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5 There are inputs on this translation model from other 'technoscientists' as well, such as Michel Callon and others.
chain is made of actors - not the patients - and since the token is in everyone's hands in turn, everyone shapes it according to their different projects. (Latour, 1986, p268)

Law (1986) argues that in the translation model the concept 'power' is treated as a composition, that is, "the composition of a set of actors who are temporarily enrolled in the schemes of the powerful and who accordingly lend their efforts to his/her project" (p17). One of the central leitmotifs of this translation model is that there is not a background, a determinant social structure that may be observed by social scientists. Rather, 'what may be observed are sets of different people trying to define the nature of social structure, and then trying to persuade others to subscribe to that definition' (Law 1986). Thus, this school (the school of science and technology studies) advances a methodological corollary that "social scientists should stop trying to determine the nature of social structure that they believe generates these conflicts, and instead treat the latter as data".6 In other words, "society is not seen as the referent of ostensive definition, but rather seen as being performed through the various efforts to define it" (Law, 1986, p18).

Latour (1987) suggests that 'we should study 'science in the making' or 'science-in-action' rather than 'ready made science'. In adapting Latour's (1987) approach, Preston et al (1992, p264) note that "Latour suggests that in order to better understand the nature of technology we should examine the processes involved in its fabrication. In this respect scientific facts and technical artefacts, for example machines, are not viewed as being part of a pre-existing natural order, simply waiting to be discovered by the people in academia and in the commercial world. Rather, they are the result of an elaborate process of fabrication." Thus, according to Latour, the "facts and artefacts (technology) continually changes shape and content as alliances are stitched together to achieve it" (Cockburn, 1992). Latour, therefore, is of the opinion that 'science and technology' are socially constructed. This

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6 Here one may see some conceptual and theoretical differences between Habermas and the related school and the authorities of 'science and technology' studies (as mentioned in the text). Whereas the former places importance on the 'social structure' and believes that there exists a background 'social structure', the latter group does not have recourse to a determinant background 'social structure'. Rather it assumes that a social structure is generated in the course of struggle [see Law (1986b, pp1-19) for original emphasis of how they (technoscientists) have attempted to distinguish themselves from the former, that is, by inculcating what John Law calls 'the third phase of sociology')].
conforms with his (Latour 1987, p259) inculcation of principles, especially, his first and third principles, as follows:

*First principle* The fate of facts [science] and machines [technology] is in later users' hands; their qualities are thus a consequence, not a cause, of a collective action.

*Third principle* 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 in the same task as understanding who people are.

Referring to the cybernetic literature Latour (1987) introduces a concept called the 'black box' to refer to a piece of machinery or a set of commands whenever it is too complex. According to Latour (1987), to build a 'black box', whether this is a theory or a machine, it is necessary to enrol others so that they believe it, take it up and spread it. The control of the builder is therefore seldom absolute. "The new allies shape the idea or artefact to their own will - they do not so much transmit as translate it" (Cockburn 1992, p34). Thus, the concept of *sociology of translation* is determined.

As mentioned earlier, there have been inputs into the concept of 'sociology of translation' or actor-network approach by other technoscientists such as Michel Callon and his colleagues (cf. Callon, 1986, Callon et al., 1986). For example, according to Callon (1986), the 'actor-network' or 'translation' approach, as noted by Law:

... is based on the assumption that as actors struggle with one another they first determine their existence and then (if that existence is secured) define their characteristics. An actor that exists is thus one that is able to exert itself upon others. It attempts the latter by borrowing the force of others in a process that Callon calls 'translation'. This process involves four stages. First, an actor tries to make itself indispensable to others - to force them to come to it. Having done so - it moves to a second stage - called by Callon 'interessement' - in which it attempts to lock these others into place by coming between them and their alternatives. It is at this stage that discretion is removed and the actors so trapped become authorities in the sense defined by Barnes. The third step involves both the definition of the roles that are to be played by these 'authorities' and the way in which they are to relate to one another in the scheme devised by the principal actor. This process, which Callon calls enrolment, thus involves the generation of a network of passive agents that may, for all intents and purposes, be seen as forming part of the actor in question (hence the term 'actor-network'). Finally, the actors borrow the force of the passive agents that it has enrolled by turning itself into their spokesman and talking on their behalf. Callon calls this part of the process mobilisation... (1986, pp.15-16)
By contrast, if we look at Habermas's inculcation of 'language processes' and his communicative model (Habermas 1984, 1987) we can see that he has placed importance on specifying how actors (human) can better organise and coordinate their joint actions (see chapter three). However, the introduction of "non-human" actors by the above authorities [science and technology school] into the actor-network in achieving 'power' (a Machiavellian-like) is a new concept. Habermas might not see any deficiency in his approach that could surprise him by this. He might argue and defend himself by advancing a discursive argument that the coordination of actions of various 'actors' can be seen occurring in more than one way and this is (probably) one of such accounts. However, his major concerns are how to deal with the 'subjectivity' of the human actor-networks rather than the non-human actors. As well, Habermas might claim that this 'actor-networks' approach can be a part of the 'language processes' (see chapter three - section 3.3.1) in that as long as the actor-networks (human actors) can use this approach in apprehending, understanding, organising and changing their (actors) social life in a better way, it becomes enabling and, therefore, part of the 'language processes'.

4.5 **Latour's Rules of Methods**

Latour argues that "there are many methods for studying the fabrication of scientific facts and artefacts". In the introduction of the volume *Science In Action* he states that:

... we will not try to analyse the final products, a computer, a nuclear plant, a cosmological theory, the shape of a double helix, a box of contraceptive pills, a model of economy; instead we will follow scientists and engineers at the times and at the places where they plan a nuclear plant, undo a cosmological theory, modify the structure of a hormone for contraception, or desegregate figures used in a new model of economy.... Instead of black boxing the technical aspects of science and then looking for social influences and biases, ... be there before the box closes and becomes black..

To start our enquiry, we are going to begin from the simplest of all possible situations: when someone utters a statement, what happens when the others believe it or don't believe it. Starting from the more general situation, we will be gradually led to more particular settings. (Latour 1987, p21)
Throughout the volume *Science In Action*, Latour (1987) delivers seven rules for methods of studying 'science-in-action'. These rules are represented in an Appendix of this volume, as follows:

**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 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. (Latour, 1987, p 258)

### 4.6 Accounting Research, Critical Ethnography and Latour

In the accounting literature, from a non-positivistic research point of view, there are attempts to use 'ethnography' as a 'method of discretion' in investigating and writing up (representing) micro level 'field works' (see Berry et al, 1985; Dent 1991; Laughlin and Broadbent 1993, Preston et al, 1992; Broadbent et al, 1991; Chua 1993). More recently, there have been attempts to write 'ethnography' particularly using the works informed by Latour and his colleagues. It is claimed that the works informed by this authority portray a
range of 'tactics, tools and tribulations' (Chua, 1993), 'rules of methods', 'mode of representations' for investigating and representing the creations and fabrications of 'the doing of accounting' (Robson, 1991, 1992; Preston et al, 1992; Chua, 1993) at a micro-organisational context.

Robson (1991, p550) relates the concept of 'the sociology of translation' to understanding the processes through which accounting and the social can be interrelated. In conceptualising and relating this translation model to the accounting changes, Robson (1991, p550) argues that the "translation will refer to the process through which often pre-existing accounting techniques, and their associated roles, are articulated discursively, in ways that construct individuals' and groups' interest in those techniques, and may subsequently provide motives for producing changes in accounting" [emphasis added]. According to Robson (1991, p566), the concept of translation can be seen as a construct for understanding the specific associations, connections or "positive" relations that are made between accounting and its social context. Thus, Robson (1991, p566) urges that "in examining accounting change, it is necessary to attend to the process through which particular accounting statements, calculations and techniques are subject to a translation into wider social, economic and political discourses not normally associated with the apparently neutral, technical discourse and practices of accounting".

Preston et al, (1992) also use Latour's (1987) various concepts in carrying out and writing up the 'field-work' of the budgeting fabrication processes at the NHS (National Health Services) in the UK. They advocate that:

Our investigation of the fabrication of budgets was particularly informed by three guidelines from Latour's [1987] rules of method. Firstly, we chose a controversial accounting and budgeting technology to facilitate the identification of alternative possibilities. Secondly, we mapped networks of resource, support and use, both historically and across conventional organisational boundaries, in order to examine the multiplicity of people involved in the fabrication process. The third guideline was to attempt to be present in the fabrication process before the black box is closed and debates have died down. (Preston et al, 1992, p567)
In their conclusion, Preston et al (1992, p590) urge that "[j]ust as the study of science has moved into the laboratory (Latour and Woolgar, 1979) so it may be fruitful if students of accounting in action also examined the practices and discourse of management consultants, systems analysts, software engineers and designers, and accountants involved in fabricating accounting and budgeting systems".

Chua (1993) also applies the 'translation' or 'network' approach in writing a "critical ethnography" of the fabricating processes of the implementation of a case-mix DRG systems (a cost accounting technology) at three public hospitals in Australia. Chua (1993, p9) raises the question: 'why use their [Latour and his colleagues] work as a signboard to write a piece of critical ethnography about the fabrication of accounting knowledge?'. In response she argues the following:

Firstly, the making up of new accounting numbers and the battle to secure their legitimacy may be seen as being similar in important respects to a scientific controversy. Like these controversies, the birth of an accounting may change the map of organizational 'reality', challenge existing work traditions, and unfold battle-like, with opposing supporters and detractors who are intent upon vanquishing each other.

Secondly, Latour's sociology of translation does not begin with the simplistic, positivistic assumption that a particular science or technology (or set of accounting numbers) is rationally accepted because it more accurately represents reality. Nor is science to be created by the mechanical following of the rules of 'scientific method'. Instead, Latour and his colleagues ask how a certain notion of reality came to be socially constructed and how and why a fact-building network emerged and survived Machiavellian-like - what are the human and non-human resources, stratagems, ploys and persuasive strategies used by actors with divergent interests to initiate, maintain or in certain cases, destroy knowledge networks? Who are the allies who/which were mobilized, how are competitors cut down and conquered, which authorities are used to stack particular arguments, how are stronger software or formulae built to cover as many contexts as possible in as succinct a manner as possible? In what ways are appeals to 'truth' and 'truthfulness' mobilized by fact-builders and to what effect? Such questions are useful because they focus analysis on the processes of fact-fabrication and the technical and socio-political ties that hold together to form 'truth'. In effect, the sociology of translation extends constructivist conceptions of knowledge creation (see Knorr-Cetina, 1981; Gilbert and Mulkay, 1984) by providing a systematic, well illustrated framework that highlights the competitive, connected and communal processes of knowledge-creation and the crucial role of networks of interest.
Thirdly, the work of Latour and Callon draws attention to the persuasive power of non-human resources such as visual inscriptions, academic texts and 'centres of calculation' (Latour, 1988a). Paperwork such as formulae, graphs and charts are argued to possess many rhetorical advantages: they are mobile, immutable, recombinalbe and are perceived to be built on many 'facts'. Most important of all, inscriptions make 'black boxes' visible... (p9)

4.7 Critiques of the Actor-Networks Approach and Latour's Rules of Methods

Chua (1993, p10) argues that "[u]seful though the sociology of translation is, it is not without ambiguity or weakness". By considering some counter accounts of Shapin (1988) and Barnes (1981), she advances a critique of Latour's actor-networks approach, namely, Latour (1987) did not see interests of actors (people) [which was related to Latour's fourth rule of methods, that society should not be separate from science] as being a theoretically predetermined class structure of capitalistic societies. Preston et al (1992) advance a sceptical view of the absolute following of Latour's first rule of methods, that is - 'we should arrive before the facts and machines are blackboxed'. They proclaim that it is not possible to arrive before all the important events are impacted in the fabrication of facts and technology, "some judgement of the historical context is unavoidable".

In most of the works of Latour, it is implicit that to him 'power' is something like a capacity or effectiveness, which does not accommodate any other forms or meanings of 'power' - such as 'domination' or 'coercion' or so. In other words, his representation of 'power' has a lack of concern for accounting 'intersubjective communicative subjectivity'; also, "there is an incomplete representation of the historical dimensions of power" (see Cockburn, 1992).

However, Latour's rhetoric and vocabularies may encourage us to redirect 'the doing of research'; towards 'traces and inscriptions' of 'the doing of accounting'. A particularly apposite example of this is the merging of human and non-human actors into the actor-networks, which may reconstitute a distinctive direction for 'the doing of research' in 'accounting-in-action'. Is this a solution for us where our (as accountant) job is to deal with both managing the 'human-actors' and the 'machines' (non-human actors) in 'the doing of
accounting'? Rix (1991, p3) contends that "collapsing of humans and non-humans into each other aids in the reversal of forces, the inversion of orders of magnitude, and a corresponding alteration of scale, all so necessary to invest with some validity Latour's hopes for the possibility of reform in or of the social world". However, Rix (1991) advances the criticism of Latour that it is "more surely not the case that we can avoid or deny the importance of the ideological and rhetorical roles of those 'traces and inscriptions' which have been decided within large power structures by the powerful social forces which occupy and control them". He further argues that "Latour's abolition of the distinction between human and non-human is based on a reconstitution and blending, even merging, of the entities cohabiting in the social world". Schuster (1991, p18) argues that "Latour empties his explanatory space of 'contextual' forces and structures, and so he also thereby necessarily empties his key actors (Princes, entrepreneurs, innovators) of any internal socio-cognitive texture". Schuster (1991, p18) further argues that "in the end, one is left with rational, clear sighted heroes who participate in inherently whiggish 'just-so' stories of triumph, in which everybody instantly recognises 'hard' facts, 'too large' costs, and 'too many' allies, and judges, acts and enrolls accordingly. One is left in principle not with bad history writing but with writing that bears no serious relation to what we customarily and appropriately accept as historical inscription at all."

In addition, Latour's model might assume that all contenders make essentially the same evaluations and judgements of the state of play in the agonistic moment or rhetorical situation. 'Latour is [also] limited in considering so many social foci' (Rix, 1991). Some may charge that in applying a Latourian approach there is a possibility of reducing the actors' social world to merely just the 'traces and inscriptions', which may become closest to the canonical positive association. Therefore, why use Latour's concept? Is it for a 'methodical discretion' or mere techniques or his rhetoric? The question is not an easy one to answer, at least in this short space and time. Nevertheless, Latour makes many shrewd observations. He is correct, for example, 'in insisting that the status and fate of a fact as a fact is entirely in the hands of subsequent users; or in his observation that since facts and
machines have no inertia, their stability over rounds of usage require explanation every bit as much as would their alternation, rejection or renegotiation' (Schuster, 1991, p18).

Some may argue that Latour has no agenda for a research program on how to deal with the interrelationships within state, economy and society other than the micro laboratory situation. Schuster argues that to Latour - "state, economy and society are crystallised products of earlier successful passages of network building, so until we tell those stories we cannot mobilise the products in explaining things that came later" (1991, p24).

4.8 Accounts of the Field Research Processes (Methods) of this Study

Discussion on the field research methods as opposed to a research 'methodology' (see chapter three), is not a *panacea* when extending the theoretical and epistemological debate. Field methods or research processes are always contingent on the nature of investigation. Methods in conducting a 'field work' vary depending on the researcher's time and space availability, personality, social historical class, ethnicity, gender and economic class, obtaining access; and the location of research site.

Booth (1991) argues that the description of the methods in any field study (he refers to 'case study') is difficult. Booth (1991, p139) further argues that 'while some issues can be addressed before the study commences, others evolve or can only be addressed as the research progresses'. Similarly, Simon argues that

There is never a single, standard, correct method of carrying out a piece of research. Do not wait to start your research until you find out the proper approach, because there are many ways to tackle a problem - some good, some bad, but probably several good ways. There is no single perfect design. A research method for a given problem is not like the solution to a problem in algebra. It is more like a recipe for beef stroganoff; there is no best recipe. (1969, p4)

However, the following two sections contain an account of how this study has been carried out. That is, how I got a 'way in' to the rapport or researched organisation as well as the 'quasi-laboratory'? What was my involvement?
4.8.1 *Way In to the Quasi-Laboratory*

It is not Latour's (1987) laboratory that has been investigated. It is neither a project of the innovations of production technology nor the weaponry of a Machiavellian 'Prince' (Latour, 1988). It is a project where *men* and *women* of a large steel division have been engaged in designing (or customising) and installing (implementing) a mainframe Integrated Business System (IBS) in order to fabricate their cost management and other information systems. In a way it can be called a 'quasi-laboratory' because there are many similarities as far as the processes of 'fact-building' in a laboratory (cf Latour, 1987; Latour and Woolgar, 1979) are concerned.

Latour (1987, p2) asks "Where can we start a study of science and technology? The choice of a 'way in' crucially depends on good timing." We (my Supervisor and I) had been trying to gain access into a large organisation for more than a year, where re-structuring or change process was underway. My supervisor had obtained information that a major change process was underway at a local steel manufacturing company (ie, BHP's Slab and Plate Products Division - BHP-SPPP). Eventually, we were granted an appointment on Friday 7 March 1992. Unfortunately it was cancelled, however, we did not abandon hope. On 12 February 1992, Professor G (my supervisor) asked me, "Where is your dress - ie suit plus tie!". We then headed off at 2-00 pm from the university to meet a senior executive officer (SEO) (Mr GS)\(^7\) at the commercial building premises of the researched organisation.

It was our first appointment. After introductions, the SEO handed over two 'draft' (as they call it) copies of strategic highlights on the project 'Phoenix 21 Project - Stage I'. These draft copies were labelled as "World Class Cost Management Strategy for the 90s". He then explained the strategic features of the SPPP's cost management systems and their on-going Phoenix 21 project (also known as SAP\(^8\) project). After explaining some strategic

\(^7\) Mr GS was the project co-ordinator at the time.

\(^8\) SAP stands for Software, Applications and Product AG Ltd the company which supplied the software system (more emphasis about SAP will be provided in chapter five).
issues of the project for about an hour, the SEO asked us what could he do for us. "What sort of things are you looking for?"

In reply, I recall saying "I am trying to do some research on the area of management accounting and control systems". I also mentioned some other tentative areas to be investigated (see Appendix 2 for details of diaries). This was basically uttered to show my confidence that I had some real intention to do research and that I was familiar with contemporary cost management issues. However, the SEO asked me whether I wanted to be involved with their on-going Phoenix 21 project (what I call quasi-laboratory). If so, he could arrange for that. My supervisor, Professor G, supported me by saying: "Aren't you looking for this?" From my methodological training I could easily recognise why he was insistant that I do this project. It is mainly to apprehend the idea that in conducting any investigation on contemporary change processes there is a need for a process oriented involvement. Where a broad thrust of such an investigation process moves towards the searching out of synonymous, or pseudonymous trends, alongside the unravelling thread of which the current activities [that is - the 'organisation of social life' (Habermas, 1984)] of social group fitfully march [this was my thought at the time]. The SEO arranged for a future appointment. We left the office of the SEO at 4-00 pm.

This was our initial 'way in' to the organisation, followed by the 'way in' to the 'quasi-laboratory', that is, the Phoenix 21 project. See Appendix 3 and Appendix 4 for detailed diaries of the various interactions, events and processes that were carried out during the 'field work'. The final cut off date of my involvement with the quasi-laboratory is November 1993.

4.8.2 Field Research Processes

There were various modes of field research processes followed in this study. These processes include attending various meetings, review sessions and training courses to hands-on and understanding the computer system; collecting a wide range of project design related documents, minutes, discussion papers and other materials; conducting interviews
(both formal and informal) with various levels of officials including some officials outside the quasi-laboratory. For most of the involvement diaries were kept (see Appendix 4). Most of the interviews were tape recorded (see Appendix 3). Initially there were some interviews which were not tape recorded. All these interviews are written based on the notes taken during the interviews (see also Appendix 3). These were conducted mainly to familiarise, maintain and develop further interactions in order to keep track of and update the fabricating processes. Interviews were conducted with a general range of questions and were prepared before interviews and conducted with a focus on particular key questions depending on the nature and works with which the interviewee was involved. The questions were not followed up in a fixed order, and issues raised by subjects were pursued. These interviews, in fact, supplemented a vast body of comments and information gleaned from the informal discussions. Extensive notes were also taken at the various interactions.

My role as a researcher was announced to the team members of the project from the start of my involvement in the quasi-laboratory by the project co-ordinator (for the diary see Appendix 4 - 23 March 1992: Monday). This has helped me to gain access to various facilities including documents and photocopying facilities and so on. I was provided with a desk and a special digital card to enter the quasi-laboratory. Initial 'familiarisation' of the 'actors' various manipulations on the fabricating cost management systems (CMS) was gained through attending various review sessions and meetings and reading various internal documents. Above all, I tried to understand the various fabricating processes in the quasi-laboratory by observing aspects such as: How did they open various 'black boxes' (accounting or otherwise) then debate them? What did new allies do when they came in? When there were new displays of softwares or design related prototype seminars what did people ask? How would the systems impact on them? What did the system mean to them? And so on.

Moreover, initially I had to search for 'key informants' (Tremblay, 1982) to be interviewed. On the basis of the 'verbatim conversation' or information gleaned from
meetings or informal chats with the project members, the selection of key informants to be interviewed was made. However, most of the interviews were conducted with the people who were attached to the project. It is an interdisciplinary project by nature where various actors from differing areas such as Finance and Planning, Supply, Production, Engineering, Maintenance Engineering and Human Resources had been involved in fabricating the IBS. Informal interviews and verbatim conversation with the various project members, and reading the conceptual and the functional and other design documents also enabled me to quickly understand the fabricating processes of the 'fact-builders'. Attending five weeks of formal training courses on some SAP's software modules enhanced my understanding of the various design related papers and documents and the 'actors-networks' (both human and non-human) within the quasi-laboratory. I attended these training courses at SAP's Chatswood office in Sydney, Australia during June through August 1992 (see Appendix 4 for diaries). Without such computer 'hands-on' training courses, it would have been a difficult task to understand the 'machines' (software modules), let alone, follow up on the fabrication processes of the 'fact-builders' in the quasi-laboratory of this type including the 'traces and inscriptions' of the 'machines' (ie, SAP system).

Since my access to the quasi-laboratory was well accepted, there were no obstacles to collecting the documents (with some exceptions). Various internal documents (that is, a range of design papers, occasional papers, project design manuals both current and historical, various booklets of differing initiatives of the fabricating CMS and other systems) were collected through various interactions with the various officials both inside and outside the quasi-laboratory. Sometimes extra copies of some of the design related documentations were specially made available to me. There was no shortage of co-operation. All the members became friendly, co-operative, open, supportive, and seemed genuinely to value my interest in the investigation of the complex activities of the project. Sources of secondary information (historical data) included the BHP-Library, local news papers, published books, special monographs, memorandums and journals about the researched affairs. Most of the secondary information about the software company (ie SAP
International AG Ltd) was collected through personal interactions with the consultants and from their office in Chatswood, Sydney, Australia.

4.9 Some (Dis)similarities with Latour's (1987) Leitmotifs and his Rules of Methods and my Study

Like Latour's (1987) way in to the laboratory, my way in to the quasi-laboratory was also well-timed. At the time, there were many discursive conditions that prevailed in the quasi-laboratory, which can be matched with some of the leitmotifs of Latour's (1987) positioning tactics (or otherwise) of the 'fact-building' processes within the laboratory life. Also, there are similarities in my investigation processes in the quasi-laboratory to some of Latour's (1987) rules of methods. First, my way in to the quasi-laboratory matches with Latour's first rule of methods. That is, I arrived before the facts (science) and machines (technology) were 'blackboxed' in the 'quasi-laboratory' and before controversies died down and well before the implementation of the systems (IBS). Secondly, similar to Preston et al (1992), I mapped networks of resources, support and use, both historically and across conventional organisational boundaries, in order to examine the multiplicity of people involved in the fabrication process. Thirdly, I gathered various 'machinations' and 'inscriptions' of the systems and how they would tie together to become an integrated system.

In a way, my investigation also matches one of Laughlin's (1987) methodological rules - that is, the 'quasi-ignorance' stage, where the researcher (the traveller) to a certain extent enters into a rapport without any pre-conception of its reality. However, in many respects my 'field work' in the quasi-laboratory would be short of (or dissimilar to) Latour's rules of methods. For instance, Latour's (1987) fifth rule of methods suggests that we should follow all the networks no matter how long it takes and how heterogeneous they are. But, in a project (ie, the quasi-laboratory) like the one I investigated it would be a difficult job practically for a single researcher, though not impossible, to attend all the meetings and note the utterances of the various players (actors-networks) as they opened 'black boxes' and so
on. There were so many overlapping meetings, diverse activities that one could only hope to get a general view of with some specificity over a lengthy period of investigation.

As well, Latour's (1987) second rule of methods might not be appropriate in a study like this. This is because there is a need for some judgement about the fabrication process whether it is good or bad, or why some 'facts' and 'technology' (software modules) might have been accepted and others rejected. In this regard, Laughlin's (1991) advancement of differing evaluation models on the 'change' processes in an organisational context might be seen to have much to offer (see chapter two). However, I am not re-visiting this issue here but merely noting the case of Latour's second rule of methods.

It may be possible that in a Latourian laboratory (cf Latour 1987) there was limited people-interaction. But, in a 'quasi-laboratory' like this where the number of actors (both human and non-human) dealing with the design and implemention of the IBS is large, it would be difficult to interact with all the 'actors' (including the 'machines') involved in the laboratory. Moreover, as mentioned earlier, the project is interdisciplinary by nature, where various actors from differing functional areas such as Finance and Planning, Supply, Engineering, Maintenance Engineering and Human Resources have been engaged in designing and prototyping various standard SAP software modules for their own respective functional requirements.

4.10 Reconstructing the Research Question and hence the Thesis Topic

Research phases provide strategic rationale for a particular research programme. In most research programmes, the specification or formulation of research problems/questions together with a literature review are seen to be a first and primary phase. Typically, whether or not it has to be the first phase, perhaps the importance of formulating significant research question(s) is (are) unavoidable.

Here one can argue whether problems formulated or posed by the researcher coincide with those of concern to the organisational practitioners in fabricating their facts and technology. Can researcher problem-formulation be identical with practitioners' problems
and be called 'socially relevant problems'? For whom are the research outcomes or results (stories or otherwise) to be staged or framed?

The pursuit of a scientifically significant research question(s) is (are) a never ending quest. My boundary and discovery (at least immediately to me) of 'facts and technology' are limited to the extent to which I can investigate, where I can get access and my cognitive limitations. Even more so is what I can represent from the collected 'empirics' with a theoretically consistent pattern. As mentioned earlier (see section 4.8.1), I have entered into the 'quasi-laboratory' (Phoenix 21 project) with no pre-conceptions about what I would be seeing (in other words - a 'quasi-ignorance' position) except my pre-understanding of the theoretical and methodological underpinnings that have been advanced so far. It was only after entering and spending some time in the quasi-laboratory, that I could pursue the final construction of my thesis topic: "Fabricating Cost Management and Other Systems in a Mainframe IBS Environment: A Critical Accounting Study". This is the specific research question to be analysed and represented in the forthcoming chapters. Of course, this has to be examined with the theoretical relevance and the way in which this researcher has conceptualised and advanced the methodological underpinnings. As stated in chapter three, 'embarking on a major study is dependent upon the way in which the researcher (1) resolves the theoretical and epistemological disputes in the 'doing of research' and (2) relates that to the 'action-oriented' level - that is at the level of empirical investigation'.

4.11 Summary

This chapter has further reflected on the 'methodical discretion' and the theoretical significance thereof specific to this study. The chapter begins by questioning whether 'field study' can be used as a common banner. In so doing, it is envisaged that there exist various labels to refer to 'field study' such as 'field work', 'qualitative method', 'interpretive method', 'case study', and 'ethnography'. It is also indicated that there exist differences in the application and usage of the 'case study' method (particularly) in accounting research - some
are positivistic and others are not. This dilemma led to consideration of the anthropological tradition of 'field work' (which is currently known as 'ethnography').

In section 4.3, a consideration of 'ethnography' as a methodical discretion for field research is addressed. It is envisaged that there are wide ranges of interpretive research which rely on 'ethnography' and moreover are based on differing theoretical perspectives. Thus, despite entering and solving the various riddles of such a 'methodical discretion', ie, 'ethnography', attention is drawn to some of the recent non-positivistic traditions of 'ethnography' writings and their theoretical approaches. In particular, attempts have been made to elaborate the work of Bruno Latour and his colleagues, which investigates 'science-in-action', and is known as 'critical ethnography'. This is addressed in sections' 4.4 through 4.7.

Section 4.8 has addressed the field research processes including how the 'way in' to the research site (what I call the quasi-laboratory) was used in this study. This is followed by an elaboration of some similarities and dissimilarities with Latour's (1987) leitmotifs and his rules of methods to this study. Finally, section 4.10 elaborates how serendipity patterns of the investigation processes could cause this researcher to construct the final research question and hence the thesis topic, which is what will be analysed and presented in the forthcoming chapters.
Chapter Five
An Introduction to the Researched and Other Major Organisations Involved in the Quasi-Laboratory

5.1 Introduction

In addition to the researched organisation, that is, the BHP's (The Broken Hill Pty Ltd) Slab, Plate and Product Division (SPPP), there are two other organisations that have been involved within the quasi-laboratory, that is, SPPP's Phoenix 21 project (see figure 5.1). One of them is the supplier of software modules, SAP International AG Ltd, a German based international commercial software developer and supplier. The other organisation is BHP's Information Technology (BHP-IT) (Port Kembla Regional branch) which is a service hand of the researched organisation and has been rendering services for developing and maintaining its information and computer technology. The aim of this chapter is to introduce brief historical background information about these three organisations.

Figure 5.1 Organisations Involved in the Quasi-laboratory

![Organisations Involved in the Quasi-laboratory Diagram]

5.2 Introduction to the BHP - SPPD

The Slab and Plate Products Division (hereinafter SPPD) is one of the eight major divisions of the BHP Steel Group (hereinafter BHP Steel) which performs one of the three
main businesses of the corporate BHP (The Broken Hill Proprietary Company Limited A.C.N. 004 028 077) (see Figure 5.1 below for organisational structure). BHP's other main businesses are petroleum and minerals. In addition, BHP also incorporates various services and specialist operations in the area including transport, engineering, research and development and information technology. In recent years, BHP has been considered a most successful Australian company as well as international resources company. 'In 1991, BHP ranked 120th on the Fortune Global 500 list of the world's largest industrial companies.' [see Factsheet, 1992].

It should be mentioned that the purpose here is not to unveil the total activities that BHP as a corporation performs. Rather, this study investigated the fabrication process of the development of Integrated Business System (hereinafter IBS) at SPPP through the Phoenix 21 project (ie the quasi-laboratory). However, in managing the global corporate information system with a Mainframe Data Base IBS it is highly likely that other sister companies of the BHP group would be affected. Therefore, before beginning the analysis and representation of the fabricating cost management systems (hereinafter CMS) of the researched organisation (BHP-SPPP), a brief structural background of what comprises the BHP Steel group (not the BHP's Minerals, Petroleum and other operations), would be appropriate to outline.

BHP Steel is a major supplier of steel products to both home and overseas markets. The group's major products include a wide range of flat and sheet products, rail and structural steels, and reinforcing and other rod and bar products. It supplies about 80 percent of the home market for steel products. It operates in more than 20 countries as an exporter of steel products and technology for steel processing. The group has a network of more than 40 manufacturing facilities including South East Asia and the US. The Steel group has four integrated steelworks from which a wide range of steel products are produced - SPPP at Port Kembla (NSW), Rod and Bar Products Division (RBPD) at Newcastle (NSW), Long Products Division (LPD) at Whyalla (SA) and New Zealand Steel
BHP-Steel group's *Collieries Division* (CD) is responsible for all of its mining and export of coal. The CD manages five underground coal mines in the Illawarra region from the Wollongong head office, NSW, Australia. The average production of the division is about 7.2 mtpa (metric tonnes per annum) of raw coal. Most of the raw coal (which is used as a raw material to produce steel) that is produced in these collieries is consumed by its
Recently, a downsizing scheme in the division created a social shock in the Illawarra region, NSW (Local TV News).

BHP Steel's Building and Industrial Products Division (BIPP) "produces wire, wire products and sheet steel products for building, rural and industrial manufacturing markets" (Factsheet, 1992). The BIPP "operates through five business units - Waratah Wire Products at Geelong, Sydney, Kwinana and Brisbane. High Carbon Wire Products at Newcastle produces higher grades of wire used for applications such as spring wire and stressed relieved prestressed concrete strand. Bullivants Lifting Gear produces wire rope at its Newcastle rope works. Reinforcing Products produces and markets products through its three businesses: Aquila Steel Co Ltd, Reosteel and Titan Wire Products. Lysaght Building Industries roll forms and distributes steel building and construction products throughout Australia. An associated company, Bekaert-BHP Steel Cord Pty Ltd, produces a range of tyre cord." [Factsheet, 1992]

BHP Steel's Sheet and Coil Products Division "operates rolling mills and continuous coating lines at Western Port (Victoria) and Port Kembla (NSW), as well as a stainless steel rolling mill at Unanderra (near Port Kembla), and tube plants at Revesby (NSW) and Auckland (New Zealand). It is the Australian producer of hot and cold rolled steel sheet and coil, metallic coated, painted or laminated steel sheet and coil, electro-zinc coated and electrical steel sheet, coil and strip, hot rolled stainless plate, and welded and seamless stainless tube." (Factsheet, 1992).

With the increasing pressures of international competition and management of resources, recently a new division has been formed called International Division (ID), which incorporates all the Steel Group's international activities and investments. "The division's main activities include international sales of steel products including hot and cold steel strip, coated steel sheet and coil, stainless steel and roll formed finished steel products. It also secures required imported raw materials related to steel making. The export and trading departments also act independently as a third party trader in steel, raw materials,
fertiliser and non-ferrous metals." (Factsheet, 1992).

Within the three BHP integrated steelworks SPPD is the largest producer of flat steels in Australia. It has a production capacity of 4.3 mtpa (metric tonnes per annum). The Group's RBPD operates as an integrated steelwork and satellite rolling mill, manufactures a range of steel products and provides feed to its various products mills located in Newcastle, Geelong (Vic), Kwinana (WA), Brisbane (QLD) and Sydney (NSW). LPD operates another integrated steelwork called Whyalla Steelworks, located in South Australia. It produces structural sections and rails for the domestic and export markets, as well as slabs and billet as feed stock for other BHP steel rolling facilities. The Whyalla steelworks supply feed stock to the Sheet and Coil division. More recently, BHP steel group acquired the management control (81 per cent) of New Zealand Steel which makes the fourth integrated steelworks of the group. It produces slabs for its finishing plants where a range of steel products is manufactured. BHP steel groups also own a refractory called BHP Refractories, which is involved in the design, manufacture and installation of refractory products. It has four production centres located at Mayfield, Thirroul, Port Kembla and Unanderra within the state of NSW.

During the year 1992, BHP Steel produced 6.270 million tonnes of raw steel and 5.932 million tonnes of marketable products. In addition, the group produced 6.932 million tonnes of raw coal and 2.208 million iron ores (Australian production only) (Factsheet, 1992). The group's total employment in 1992 was about 28,900 people.

5.2.1 Historical Prelude

The history of SPPD, generally known as Port Kembla Steel Works, goes back to the earliest era of steel making in Australia and the Hoskins family's endeavours towards its formation. It was in 1900 when Australia's first steel was made by William Standford at Eskbank Ironworks, Lithgow, NSW. In 1907 this plant (which was then Australia's only blast furnace and associated steel making plant) was acquired by the Hoskins family
company, G & C Hoskins Ltd. When Charles and elder brother George Hoskins became dependent on the Illawarra district for their coal requirements from Wongawilli Colliery, which was opened in 1916, they decided to move nearer to the colliery. Ultimately a decision was made to buy land at Port Kembla, 80 km South of Sydney, NSW, Australia. Finally, in 1921 the company acquired 162 hectares of industrial land from the Wentworth family (at present the division is located on about an 800 ha site). In addition, they found Port Kembla to be a better site (a seaboard location) than Lithgow. Further discussion of the Hoskins family and their valuable efforts is to be found in a publication: "The Hoskin years 1928 -1935" in *BHP Journal* 1978 vol 2 (see also McLennan 1974, Hughes 1964, Kelly 1989, Trengove 1975).

The Hoskins family's contributions to formulating the Port Kembla Steel Works have been greatly recognised by many including its present owner BHP, historians and the local people. To an extent, the establishment of the steel works at Port Kembla contributed over the years to developing what is called greater Wollongong city and its surrounding areas. In many respects the company has been contributing to the 'social matrix' (Booth 1991) in Australia. For example, in the early 1980s SPPP (also known then as Port Kembla Steel Works) accounted for about 71.6 per cent of the employment in the Illawarra region, when a total of about 22,000 workers including 2,900 employees at the collieries were employed by SPPP (see Kelly 1989). It has a long social history not only for the Illawarra region but, directly or indirectly, for Australia and worldwide. It is claimed that the division has been playing a leading role in Australia in pollution reduction in heavy manufacturing industry. "In 1991 it completed its second five year pollution abatement program with the Environment Protection Authority (EPA), at a cost of A$45 million. During 1986-1991 a further A$55 million was spent on other new environment protection measures... The steelworks has now entered its third five year program with EPA, committing it to a minimum of 30 new projects at a cost of more than A$80 million." (Company Document)

It was 1928 when Port Kembla Steel Works (it was then registered as Hoskins Iron and
Steel Company Ltd, also known as Hoskins Kembla Works) began its production operation with the blowing in of the first blast furnace. It was then considered the largest and best equipped and the first unit of the new steel works to go into operation in the British Empire. Since then it has been growing as one of the world’s great integrated iron and steel making plants, more recently producing a divergent range of steel products (more than two thousand product ranges).

<table>
<thead>
<tr>
<th>Year</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 May 1928</td>
<td>Formed Australian Iron &amp; Steel Company by absorbing all the shares of Hoskins Iron &amp; Steel Company.</td>
</tr>
<tr>
<td>29 August 1928</td>
<td>The No 1 blast furnace was blown in.</td>
</tr>
<tr>
<td>November 1931</td>
<td>Steel is made at Port Kembla Steel Works - Open hearth steelmaking.</td>
</tr>
<tr>
<td>October 1935</td>
<td>BHP acquired all the ordinary shares of Australian Iron &amp; Steel Industry Ltd.</td>
</tr>
<tr>
<td>1938</td>
<td>No 2 blast furnace was completed and coke oven was built on the site.</td>
</tr>
<tr>
<td>1946</td>
<td>BHP selected Port Kembla site for building a Hot strip Mill introducing a new technology to Australia.</td>
</tr>
<tr>
<td>August 1955</td>
<td>Hot Strip Mill officially opened &amp; commissioned the first stage of the flat products developments.</td>
</tr>
<tr>
<td>1957</td>
<td>Tin mill was commissioned completing Port Kembla’s initial product development - Commissioning the Australia's first sinters plant.</td>
</tr>
<tr>
<td>May 1959</td>
<td>No 4 blast furnace was blown in.</td>
</tr>
<tr>
<td>April 1962</td>
<td>Electrolytic tinning began - thus providing Australia with the complete range of tin plate - also introduction of oxygen injection.</td>
</tr>
<tr>
<td>1963</td>
<td>A wide plate mill was commissioned providing new products for the construction industry.</td>
</tr>
<tr>
<td>1973</td>
<td>Introduction of the BOS (Basic oxygen Steel making) and No 5 blast furnace.</td>
</tr>
<tr>
<td>1978</td>
<td>The No 1 slab casting plant was commissioned.</td>
</tr>
<tr>
<td>July 1979</td>
<td>Implementation of DISC system for management reporting.</td>
</tr>
<tr>
<td>1982</td>
<td>End of open hearth steelmaking.</td>
</tr>
<tr>
<td>1983</td>
<td>A third Vessel was installed in the BOS shop.</td>
</tr>
<tr>
<td>1986</td>
<td>The No 2 continuous slab casting plant commissioned.</td>
</tr>
<tr>
<td>1986/87</td>
<td>Introduction of the Plan Value control (PVC) concept in costing.</td>
</tr>
<tr>
<td>1989</td>
<td>Costing System Review project.</td>
</tr>
<tr>
<td>1991</td>
<td>Initiation of World Class Cost Management System (CMS) development project (Phoenix 21) using SAP system.</td>
</tr>
<tr>
<td>1991</td>
<td>Completed second five year pollution abatement program with the environment Protection Authority.</td>
</tr>
<tr>
<td>July 1992</td>
<td>Shift of CMS project towards Integrated Business System (IBS) project - commissioned for implementation by 1 June 1994 using SAP system</td>
</tr>
<tr>
<td>1992-1994</td>
<td>No 6 blast furnace development project initiated - this multi-million dollar project expected to be completed by 1995 - not yet commissioned.</td>
</tr>
</tbody>
</table>
Although the first blast furnace was commissioned in August 1928 the plant's association with the iron and steel industry goes back to the earliest pioneering endeavours of the English colonists. With the initiative of the Hoskins family the company had been incorporated as a public limited company in 1928. It was on 17 May 1928 that the Australian Iron and Steel Limited was formed. Upon its formation it absorbed Hoskins Iron and Steel Ltd. In 1935 BHP acquired all the ordinary shares of Australian Iron and Steel Ltd and thereafter, the company belonged to BHP as one of its subsidiary companies. Ever since, the company has been growing in terms of both technologies, product development and the expansion of markets. Today, it is considered one of the world's most technically advanced producers of quality steel products.

Historical analysis, of all kinds, is neither the aim of this study nor agency (nor relevant to this study). However, some of the discrete major historical events are listed in Table 5.1 above.

5.2.2 SPPD's Operations, Products and Employment

SPPD operations have been involved with an array of plants making the steelworks a self-contained iron and steel making facility, *albeit* including complex interlinked processes. The main plants within the array include: "a sinter machine with a capacity of 5.2 mtpa; five coke ovens batteries with a capacity of 2.7 mtpa total solids yielding gas, tar, ammonium sulphate and light oils; three blast furnaces with an iron making capacity of 4.3 mtpa [recently a project is undertaken in commissioning another blast furnace, no 6]; and three BOS (Basic Oxygen Steelmaking) vessels, with a raw steel capacity of 4.5 mtpa. Current facilities include a steel ladle injection unit and a RH vacuum for treatment of special steels under vacuum, and a CAS-OB steel ladle treatment station." (Factsheet, 1992). It has a tonnage oxygen generating plant with two linde design air separation units producing gaseous oxygen and nitrogen, which can also produce liquid oxygen, nitrogen and argon. This ancillary oxygen plant has a capacity for producing 1,080 tonnes of gaseous oxygen.
and 220 tonnes of gaseous nitrogen per day.

Located in the flat products area, SPPP's tin mill consists of a cold reduction mill, electrolytic cleaning line, batch annealing line, two temper mills, a reversing mill and two electrolytic tinning lines. The tinning line each has a capacity of 250,000 tonnes a year. The steelwork also has an ancillary equipment for slit tinplate and steel strapping. Its flat products' rolling mills comprise a plate mill (capacity 600,000 product tonnes a year) and a hot strip mill (capacity 2.1 mtpa). It has two foundaries (ferrous and non-ferrous) which have a combined capacity of 2,000 tonnes a year. Other ancillary areas include a power plant, service shops and a developed computer centre.

The steelworks produces the bulk of Australia's flat steel products. It produces a range of specialised products including:

- Steels slabs, which are used as feed for the division's hot strip mill and plate mill as well as for the hot strip mill operated by the Sheet and Coil Product Division at Western Port (Victoria);
- Hot rolled coils, which provides the feed stock for the divisions tin mill and the sheet steel products produced by the Sheet and Coil Products Division at Port Kembla;
- Hot rolled mill edge, slit strip and coil plate, used for motor vehicle, building, engineering, pipe and the tube, and general manufacturing industries;
- Tinplate coils and sheet, for the canning and container industries;
- Strapping for packaging industry; and
- Plate for the pipeline and construction industries, and general engineering, also shot blast and prime coated plate.

To make steel there is a need for large amounts of ingredients such as coking coal, iron ore, limestone, dolomite, and alloying materials. The supply for these material requirements comes from different sources, within Australia and overseas. Coking coal requirements are supplied by the Collieries Division from its five coal mines located within a radius of 40 km of the steelworks. Its normal requirements of clean coal are about 3.8 mtpa. Its iron ore
supply comes from a main source, Mt Whaleback, Western Australia (WA), as well as other minor supplies from the Middleback Ranges, South Australia (SA) and Yampi Sound (WA). Its normal limestone consumption is satisfied from the supply at Marulan (NSW). The special grade limestone is imported from Japan. Dolomite raw materials come from Arrossan (SA); and alloying materials are mostly collected from BHP's ferro alloy plant at Bell Bay (Tasmania) with some imported special alloys.

Over the years there has been a large employee (particularly blue collar) reduction at SPPP. For example, at SPPP since 1982 there has been a reduction of the workforce from about twenty thousand to about eight thousand (see Kelly 1989 for exact figures and explanations of workforce reduction at SPPP). In May 1992 the division had a workforce of eight thousand one hundred people [Factsheet 1992]. This is because during early the 1980s there was a change in steel making technology from open hearth to basic oxygen steel making. This reduction has not only been taking place at SPPP but also worldwide (see Hudson and Sadler 1989 - for the collapse in steel employment in various places around the world).

5.2.3 SPPP's Management Structure & Hierarchies

SPPP's management structure starts from the group general manager who is the head of the division. Under the group general manager there are ten responsibility units headed by ten senior managers (see Figure 5.2 for a high level senior management structure at SPPP). Under each individual unit there are several managers and superintendents. For example, under the AGM Slab, Plate & Strip Products there are eight managers such as Planning & Development Manager, Chief Maintenance Engineer SP&S, Manager Production Planning, Manager Technology, Steel Making Manager, Slab Caster Manager, Plate Mill Manager and Hot Strip Mill Manager. Under each manager there are several superintendents who are responsible for specific areas of business processes. Similarly, other heads of units also have different spans with managerial and superintendents' levels of management. That is, in SPPP at the time of this study there are five levels of management,
as exhibited in Figure 5.3 below:

**Figure 5.3  Levels of Management Hierarchy at SPPD**

<table>
<thead>
<tr>
<th>Level</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>Group General Manager</td>
</tr>
<tr>
<td>Level 2</td>
<td>AGM Responsibility Unit</td>
</tr>
<tr>
<td></td>
<td>(Equivalent to Business Unit)</td>
</tr>
<tr>
<td>Level 3</td>
<td>Area Manager</td>
</tr>
<tr>
<td>Level 4</td>
<td>Area Superintendent</td>
</tr>
<tr>
<td>Level 5</td>
<td>Area Supervisor</td>
</tr>
</tbody>
</table>

In *Appendix IA*, a hierarchical list of management structure at SPPD is represented.
(This hierarchy is subject to prototype by the functional design team of the Phoenix 21 project during the implementation of IBS project)

### 5.3  An Introduction to the SAP AG company

SAP AG Ltd (hereinafter SAP) is a German based commercial software developer for a wide range of business applications. In April 1972, five former IBM employees founded SAP under the name of "Systems Analysis and Programs Development" (SAP). Today, the company representatives claim 'SAP stands for System, Applications and Products' in data processing. Initially, SAP opened an office in the centre of Mannheim in Germany. Then in 1977 the company changed its status to a German limited company and relocated its headquarter to Waldorf, Germany. In 1988 the company had enlisted as a stock company on the German stock exchange. It was around this time that SAP International AG opened a sales and support centre in Sydney, Australia. It was incorporated in NSW under the name "SAP Australia Systems Applications Products in Data Processing Pty Ltd" (A.C.N. 003 682 504). Since inception the company (SAP International AG - Germany) has been focussing on the development of software modules applicable for on-line integrated solutions, especially in a Mainframe environment, to common business problems. Today, SAP claims 'they earned the status of a major producer of international software packages used for corporate MIS solutions'.

SAP's projected revenues in 1991 were about DM 700 million (company data). SAP
claims that seventy six percent of the largest German firms and thirty six percent of the largest worldwide firms use SAP system for their Integrated Business System.

**Figure 5.4** SAP's R/2 Basis System and Applications

![Diagram of SAP's R/2 Basis System and Applications](source: SAP manual - Getting Started with the R/2 System Release 4.3/4.4)

SAP offered a standard product compatible with large Mainframe computers including IBM and Siemens. Until July 1992, the company concentrated on selling essentially a single product, called the R/2 Basis System. This R/2 system maintains integration with all of its business applications' modules (see figure 5.4). The R/2 Basis System consists of a core unit with essential elements of the program, with several individual modules dedicated to specific applications. These applications run on the R/2 Basis System with its fourth-generation language (ABAP/4). R stands for 'Realtime', meaning all relevant information is transferred automatically to different required modules on a 'Realtime' basis. In other words, when transaction documents are posted into any application, the appropriate information is recorded throughout the system such that all systems are up-to-date at any point in time.

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1 Some typical features of the fourth generation in the world of computers include further miniaturization, the development of virtual storage concept, increasing speed, the development of revolutionary memory concepts, widespread use of micro - and minicomputer systems, special software for managing data bases, multiprograming and multiprocessing techniques, data (satelite) communications, distributing processing and word processing systems. (Herroelen, 1983, p13).
SAP's R/2 system was first released in 1981. One of the main features of SAP's system application is that it covers the entire scope of business operations. It is a system with many pieces. The R/2 application system covers a full range of basic business functions. These applications include Material Management (RM-MAT), Production Planning and Control (RM-PPS), Product Costing (RK-K), Invoice Verification (RM system), Plant Maintenance (RM-INST), Financial Accounting (RF-GL), Fixed Asset Accounting (RA System), Cost Accounting (RK System), Order Accounting (RK-A), Project Control and Management (RK-P), Sales, Distribution and Invoicing (RV System), Human Resource Management (RP System), Quality Assurance (RM-QSS), Personnel Administration and Payroll Accounting (RP System), and Warehouse Management system (RM-LVS). Each individual application module runs separately on R/2 Basis software which function as an operating system and interlinked with other modules. In this way, all of SAP's software family is integrated with each other. Besides the internal business functions' modules, SAP also covers a range of other functions including EDI - with EDIFACT facilities.

Figure 5.5 SAP System Structure

![Figure 5.5 SAP System Structure](image)

(Source: R/2 Basis System - Summary of Application, D-6909 Waldorf/Baden, dated 12/01/89)

The SAP system consists of the basis system and the applications. The applications are controlled by the basis system. At the time of this study, according to SAP's demonstration, SAP system can only be installed on certain computers such as IBM and Siemens. It is demonstrated that SAP's R/2 basis system has the following software requirements: (a) operating system, (b) data communication system (DC), and (3) data base system (DB). The operating system is the master program that governs the operation of a computer.
system. The data communication system controls communications between the operating system and the computer terminals and between the operating system and the data base (DB). This DB contains all the information relating to a system in a central location. A representation of SAP's system structure is provided in figure 5.5 below.

All SAP application modules run under the control of SAP's basic software system, that is, DB and DC system. A specific compatible operating system is provided in Exhibit 5.1 below.

**Exhibit 5.1 Features of SAP Operating System**

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Operating System</th>
<th>DC/DB System</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBM</td>
<td>SSX/VSE</td>
<td>CICS, VSAM,</td>
</tr>
<tr>
<td></td>
<td>VSE/SP</td>
<td>CICS, DL1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CICS, VSAM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CICS, DL1</td>
</tr>
<tr>
<td></td>
<td>MVS/XA</td>
<td>CICS, ADABAS</td>
</tr>
<tr>
<td></td>
<td>MVS/ESA</td>
<td>CICS, VSAM</td>
</tr>
<tr>
<td>Simens</td>
<td>BS 2000</td>
<td>CICS, IMS-DB</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CICS, DB2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CICS, ADABAS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IMS-DC/DB, DB2</td>
</tr>
<tr>
<td>Nixdrof</td>
<td>VSE/SP</td>
<td>CICS, VSAM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CICS, DL1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CICS, ADABAS</td>
</tr>
</tbody>
</table>

(Source: R/2 Basis System - Summary of Application, D-6909 Waldorf/Baden, dated 12/01/89)

SAP software, as they demonstrate, has both standard and custom application features. According to SAP's demonstration, standard software, unlike custom software, can be used more cost-effectively by a wide range of customer base for a specific application. 'Standard software satisfies a company's specific needs using the same program'. SAP's standard software made this customisation possible by storing specific information in tables. Use of tables makes the system flexible to use. Thus, it is also called a table driven system. As a result, it is demonstrated that different companies or different organisations can use different programs in tailoring their individual needs. Many more inscriptions,
machinations, and display of systems' features will be dealt with while analysing the fabrication processes of the IBS implementation.

A range of differing industries are using SAP system or are preparing to use the system including the following: Agriculture and Forestry and Fishing; Power, Water Supply and Mining; Chemical Industries, Mineral Oil Producers; Quarrying, Fine Ceramics and Glass; Metal Production and Metal-Work Industries; Steel and Mechanical Engineering Construction; Producers of Office Machine EDP-Equipment; Electronics, Optics; Wood, Paper and Printing Ind.; Leather, Textile and Cloth Industries; Food Industry, Tobacco Industry; Building Trade; Trade and Commerce; Traffic and News Communication; Insurance Companies; Services (including professionals); Banks, Trade Association and Federations. (This information is filtered from SAP's Worldwide users list dated 01.01.92)

Worldwide there are a wide range of companies uses the SAP systems. The country's statistics of SAP users are represented in Table 5.2.

**Table 5.2 Country Statistics of SAP Users**

<table>
<thead>
<tr>
<th>Country</th>
<th>No of Customers</th>
<th>Country</th>
<th>No of Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>1,048</td>
<td>Malaysia</td>
<td>5</td>
</tr>
<tr>
<td>Austria</td>
<td>110</td>
<td>Luxembourg</td>
<td>4</td>
</tr>
<tr>
<td>Switzerland</td>
<td>87</td>
<td>Hungary</td>
<td>3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>52</td>
<td>Brazil</td>
<td>2</td>
</tr>
<tr>
<td>France</td>
<td>52</td>
<td>Liechtenstein</td>
<td>2</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>46</td>
<td>New Zealand</td>
<td>2</td>
</tr>
<tr>
<td>Belgium</td>
<td>31</td>
<td>Honkong</td>
<td>2</td>
</tr>
<tr>
<td>Italy</td>
<td>29</td>
<td>Japan</td>
<td>2</td>
</tr>
<tr>
<td>Great Britain</td>
<td>27</td>
<td>Mexico</td>
<td>1</td>
</tr>
<tr>
<td>Spain</td>
<td>26</td>
<td>Trinidad</td>
<td>1</td>
</tr>
<tr>
<td>Denmark</td>
<td>17</td>
<td>Greece</td>
<td>1</td>
</tr>
<tr>
<td>Australia</td>
<td>*16</td>
<td>Portugal</td>
<td>1</td>
</tr>
<tr>
<td>South Africa</td>
<td>14</td>
<td>Ireland</td>
<td>1</td>
</tr>
<tr>
<td>Singapore</td>
<td>9</td>
<td>Finland</td>
<td>1</td>
</tr>
<tr>
<td>Canada</td>
<td>8</td>
<td>Venezuela</td>
<td>1</td>
</tr>
<tr>
<td>Sweden</td>
<td>8</td>
<td>Indonesia</td>
<td>1</td>
</tr>
<tr>
<td>Norway</td>
<td>7</td>
<td>Total</td>
<td>1,617</td>
</tr>
</tbody>
</table>

(Source: This statistic is taken from SAP's publication: Installation List of R/2 System dated 01.01.92.)

* Up to July 1992 there were 22 companies which installed and/or prepared to install SAP system in Australia (see Appendix A2).

In a recent management report SAP urges that "(t)oday, SAP has more nearly 2300 customers in 33 countries all around the world. The company's more recent history, since
the early 1980's, has again been dominated by a new generation of information technology. Key words such as "user friendly screen design", "workstation", "client/server architecture" are heard throughout the computer world. SAP is well prepared for this technological change and its response is to launch a new product family, R/3 system." (SAP Management Report, 1992)

Release of R/3 'Client/Server' created a new product cycle for SAP. They see that both R/2 and R/3 will remain SAP's main products beyond the year 2000 (SAP Report). However, a representation of the R/3 system and its major applications (mostly renamed from the R/2 Basis system with some modifications) is provided in Figure 5.6 below.

Figure 5.5 SAP's R/3 System and Applications

The company claims SAP system is characterised by the following:

- Modular Structure
- High Reliability
- Expandability as Required
- Easy Migration
- Minimum Risk during Installation
- Efficient Maintenance
- High Level Integration.

5.4 Introduction to BHP Information Technology

Although computer facilities and technology were in existence at SPPD during the

2 A legible copy is attached in Appendix 1B
1960s and 1970s it was not until 1977 that a separate group was formed jointly by S&CD (Sheet and Coil Division) and SPPP. This group served for almost a decade in developing and maintaining SPPP's computer technology including the development of various in-house feeder systems for data processing. With the formation of a separate corporate BHP Information Technology (BHP-IT) group in 1989 all the staff and facilities at SPPP's computer centre have been transferred to the BHP-IT group. The BHP Information Technology Ltd (A.C.N. 006 476 213) is now a separate entity and is a wholly owned subsidiary of corporate BHP and is part of the BHP service companies' group. It was formed with the financial management and resource backing of corporate BHP. It is viewed that "BHP-IT is a vendor-independent, multi-skilled organisation with resources to provide technical, training and managerial infrastructure to fulfil total solution needs" (Company Profile, 1993). Besides the regional centre at the Melbourne headquarters, Australia, BHP IT (at the time of this study) has two other regional centres located in Wollongong and Newcastle along with several branch offices which are maintained at Canberra, Sydney, Adelaide and Brisbane within Australia, and overseas branches at Kuala Lumpur, Malaysia and Jakarta, Indonesia.

BHP-IT provides various specialist services in computer technology. It operates as a systems integrator, facilities' manager and provider of professional computing services as well as provide services for specialised services such as Electronic Data Interchange trading facilities (Company profile, 1993). By June 1993 the company had a workforce of 1,100 people. The highest numbers of BHP IT's staff are in the Wollongong region covering 470 people. The Wollongong region has its main office located at King Street Centre, Port Kembla, where the initial office of the "quasi-laboratory" was located.

BHP-IT's Port Kembla regional office is now a separate entity. Therefore, SPPP (the researched organisation) treats the IT as a separate business organisation and as an external entity. As separate players of the 'fact-building' processes in the "quasi-laboratory" this separation has a tremendous impact on fabricating cost management and other systems at
the researched organisation (more emphasis will be added in the forthcoming chapters).

5.6 Conclusion

This chapter introduced brief structural background information about three major organisations that are engaged in the 'fact-building' processes through the "quasi-laboratory" (Phoenix 21) for developing and implementing cost management and other systems of the researched organisation, namely, BHP-SPPD.
Chapter Six
Cost Management Systems (CMS) Development of the Researched Organisation in a

6.1 Introduction

Insights into the historical background can provide the impetus for understanding the emergence of change or why possibilities for change (such as new technological possibilities or so) emerge. This has been widely recognised by the critical accounting researcher (cf Burchell et al., 1985; Capps et al., 1985; Laughlin, 1987, 1991; Hopwood 1990; Cooper 1983; Preston et al., 1992). Thus, before proceeding to my analysis and representation of the 'fact-building' processes (that is, fabricating and implementing new cost management and other systems at SPPD) through the quasi-laboratory, there is a need for providing an historical prelude, definitions and principles of the existing Cost Management Systems (CMS) developments at SPPD.

There has been a number of discursive conditions and discrete events that might be seen as attempting or giving rise to the development and improvement of cost management practice at SPPD since 1978. The year 1978 is considered as a starting point for an historical analysis of SPPD's CMS because it is the time when SPPD moved for the first time into a computerised mainframe CMS with the introduction of the PISC (Pirect Integrated Standard Costing) system. Unlike the selection of starting period, consideration of the exact cut-off period is difficult, for two reasons. First, the existing systems are still in use at SPPD. Second, there have been various programs carried out in the late 1980s with a 'stop and start' syndrome. Tentatively, however, the period prior to the initiative of the implementation of new accounting and other technologies for internal data processing and management reporting through the quasi-laboratory (ie, the Phoenix 21 project), is considered as a cut-off period. That is, up to the time when the PA Consulting Group and SPPD in 1989 jointly carried out a study in evaluating SPPD's existing costing systems and its concepts and principles. Theoretically, it is from that point in time the initial "jolt/kick"

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1 This is the task ahead of me and will be presented in the forthcoming chapters.
for changing SPPP's old (internal data processing) "technologies" emerged. It is the time when the initiative for the formation of the quasi-laboratory at SPPP also began.

The chapter is organised as follows. The first section will examine SPPP's understanding of CMS. The following sections will elaborate the historical background of the existing CMS development, both in terms of systems and the various programs and principles, at SPPP since 1978 but prior to the initiative of the formation of the "quasi-laboratory".

6.2 An Understanding of CMS at SPPD

At the time of this study there was no explicit definition of the terminology of 'Cost Management Systems' (CMS) at SPPD that could be read as a formal definition. On the other hand, it is not that their understandings of the contemporary connotations of CMS are any less than the contemporary practiced views and the academic literature on the subject. In certain respects their understandings have rather been striving for emerging views concerning CMS.

Determining a meaning of CMS may require more time and space than is available here because there is no coherent knowledge existing in the literature. However, from a practiced point of view, to provide an international forum CAM-I (Computer Aided Manufacturing International Inc) launched a CMS program in 1986. One of the main foci of this program was designed to share the ideas of the cost management experts, and to overcome the deficiencies of the existing cost accounting systems. An outcome of the program was a CMS conceptual design framework, aimed at providing a set of guiding principles (see Exhibit 6.1). The advancement of these principles led CAM-I to suggest that today's Cost Management System (CMS) "should act as a comprehensive decision support system that is consistent with a firm's strategy, reports on items that are relevant and should contribute towards the business becoming a 'world class competitor'" (Murphy and Braund, 1990).
Exhibit 6.1 Some Guiding Principles of CMS by CAM-I

- Continual improvement and elimination of non-value added cost.
- Activity accounting - what activities are performed and which activities are the cost drivers within the organisation.
- Improving the traceability of costs - as opposed to arbitrary allocation methods and erroneous relationships.
- Optimising life cycle performance - provide visibility of the factors that influence the total inception to abandonment of a product, process or project.
- Enhancing decision making tools - improved information for design, capacity, make/buy and investment decisions.
- Integrating performance measurement criteria with financial performance - for the factory floor, plant, business and market.
- Supporting various levels of automation and diverse manufacturing philosophies.
- Supporting internal controls - capable of handling a paperless environment.

(Source: CAM-I Document, 1988)

A schematic representation of the CMS architecture outlined by CAM-I is reproduced in figure 6.1. Although Kaplan, Cooper, and Johnson can be seen as catalysts for some of the ideas that were commissioned into the CAM-I research programs, undoubtedly the overall combined challenge to the conventional cost accounting practice by CAM-I has brought forth many features of differences with the CMS. These differences, as highlighted by CAM-I, are reproduced in table 6.1.

Figure 6.1 CMS Architecture

(Source: CAM-I presentation material)
Table 6.1 Difference between Conventional Cost Accounting and CMS

<table>
<thead>
<tr>
<th>Features of Differences</th>
<th>Conventional Cost Accounting System</th>
<th>Cost Management System (CMS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Focus</td>
<td>Short-term Event</td>
<td>Short &amp; long term process</td>
</tr>
<tr>
<td>Measurement</td>
<td>Product consume resources</td>
<td>Activities consume resources</td>
</tr>
<tr>
<td>Reporting focus</td>
<td>External</td>
<td>and products consume activities</td>
</tr>
<tr>
<td>Investment</td>
<td>Focus on Justification</td>
<td>Internal Focus on identifying investment opportunities</td>
</tr>
<tr>
<td>Cost elements</td>
<td>Material, labour and overhead</td>
<td>Material, labour, overhead and technology</td>
</tr>
<tr>
<td>Overhead</td>
<td>Fixed and Variable</td>
<td>Traceable and non-traceable</td>
</tr>
</tbody>
</table>

(Source: CAM-I presentation transparency)

The key concepts developed by CAM-I's CMS program by differentiating CMS with the traditional cost accounting system include activity accounting, cost driver analysis, direct traceability of costs, identifying non-value added activities, life cycle management, impact of time on cost and technology accounting. One of the major objectives of an activity accounting is, as suggested, a way to accomplish an organisation's goals and objectives through selecting activities that consume organisational resources. Thus, monitoring activities is seen as a way of controlling cost and hence the effective management of the business processes.

During the last decade or so, there has been a plethora of studies conducted using the notion of ABC (Activity Based Costing).\(^2\) However, few such studies highlighted managing business processes beyond a product costing solution. Additionally, these studies do not have any focus on new technological possibilities in managing today's corporate accounting and other systems, or any focus on the emerging technological possibilities (accounting and other data processing technologies) that can give rise to changing constitutive roles of a CMS in a complex organisational context.

True, in a manufacturing organisation all activities are required to make products and deliver those to its customers. Managing such processes (making products and delivering

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those to the customers and otherwise) are not only limited to the management of product cost, but also to the management of all other activities [that is, managing various business processes and "logistics" (Porter 1985)]. Miller (1992) sees that extending cost management focus from a product costing towards managing broader activities and business processes in an organisation requires a new paradigm of CMS. This view suggests that CMS in today's modern complex organisation is not just a bundle of techniques of cost accounting in measuring and controlling costs such as product costing, but it involves managing a broader aspect of the business which is a focus of CMS in such a context. Although at SPPP the focus of CMS by the Finance and Planning department is towards managing activities at a broader organisational perspective, it includes recognition by the management and other members (non-Finance & Planning) of the organisation.

As indicated earlier, at the time of this study there was no explicit definition of the terminology of cost management system at SPPP that could be read as a formal definition. However, in an initial strategic highlight during the formation of the quasi-laboratory (that is, the Phoenix 21 project) a tentative definition was outlined as "cost management (system) is the provision of information needed by the managers to efficiently and effectively carry out their responsibility in regard to cost management". It is further highlighted that cost management information needs can be classified into three broad categories - strategic, operational and financial. The strategic information category should support management in making decisions including product pricing, make/buy, capacity utilisation, investment justification and new product introduction. An operational information base should facilitate measuring performance indicators by analysing such activities as productivity measurement, identification of value added and non-value added activities whilst the financial information category should fulfil such requirements as external reporting, valuing inventory and meeting other regulatory requirements.

Although the focus of CMS has been staged and framed by advancing three broad constitutive roles such as strategic, operational and financial (during the early 1990s, that
is, at the early stage of the quasi-laboratory), one of SPPP's immediate concerns was focused on the development of "technologies", that is, computer systems for internal data processing. From the viewpoint of computer technologies (ie, machines), a general understanding of the notion of CMS at SPPP not only comprises costing systems (ie, finance and planning systems for data processing) but also all other related feeder systems. Thus, an understanding of CMS at SPPP is that it comprises not only the costing and financial accounting systems, but also can comprise of other management information systems.

In response to a question: "what major requirements drive your Integrated Business System (IBS) development", a CEO (the manager Finance and Planning as well as the chairperson of the Phoenix 21 project or the quasi-laboratory) has put forward an analogy that

In most systems the costing system tends to be the hub of the wheel and the other systems tend to be the spokes of the wheel. Most things that are part of other systems typically end up finding their way into the costing system and may well then find their way back out of the costing system into another system. So, certainly the original Cost Management System development methodology was one which recognised that the costing system was going to be pivotal. The difference is that a lot of the strategic benefits that may have been derived by doing the costing development were only going to be capable of being delivered by severely expensive interface requirements that would have to be built in between other systems. That was inefficient and ineffective and too costly. And, more importantly one of the key benefits was to get one time data input at source and to let the system then take care of where that data needed to be transferred. A very important issue is that we won't be getting a situation where data had to be re-entered into other sub-systems. (JH interview)

I should however emphasise here that the central focus of this study is not only to investigate the processes of the 'quasi-laboratory' where people (both inside and outside the quasi-laboratory) have attempted to mesh various 'fact-building' processes in designing CMS with a particular technology (ie, SAP system); but also to other roles of CMS at SPPD. For example, one of such focuses, similar to Preston et al (1992), is to concentrate on the changing ideas about how technology is to be used and the procedures and
calculations that are made possible by the technology, which can give rise to various new emerging roles of CMS.

A team leader [BM] of the quasi-laboratory responded (to one of my questions) that

Basically, in order to achieve the objective of CMS we should have a well Integrated Business System (IBS). If you like, CMS is the objective [of the Phoenix 21 project from Finance and Planning point of view] and the IBS is rather a means (or tool).

6.3 Historical Prelude to the CMS Development at SPPD

The term Cost Management System (CMS) is a recent addition to the vocabulary that is used in BHP-SPPD. Its development goes back to the introduction of the DISC (Direct Integrated Standard Costing) system in 1978. The introduction of the DISC system was the first move into a computerised CMS at SPPD. Since then, and more particularly from mid the 1980s, there has been a continuous effort to understand and improve the costing system both in terms of systems and costing principles made by the SPPD’s Finance and Planning department. Unlike the recent commissioning of an Integrated Business System (IBS) project3 (ie Phoenix 21 project), the costing issues have been dealt with by other parties such as Engineering, Maintenance, Supply, and Human Resources departments. The initiative of the CMS development in SPPD began in the mid 1980s when there was a major re-structuring taking place within the BHP Steel group (before then it was known as Australian Iron & Steel Pty Ltd). At the time, all the steel operations of the group were sub-grouped on the basis of product lines' specialisation so products would not overlap within various steel works. Accordingly, several divisions were established. For example, the Port Kembla Steel Works was restructured and named Slab, Plate & Product Division (SPPD) and assigned to produce a range of slab, plate, hot strip coil and tin plate products. Similarly, Newcastle Steel Works became known as Rod, Bar & Product Division (RBPD) and Whyalla Steel Works became known as Long Product Division (LPD). A result of this

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3 This is what I call the quasi-laboratory. It is the processes and activities of this quasi-laboratory that has been the subject of investigation of this researcher, who is engaged in fabricating 'facts and technology' in order to understand the implementing of an Integrated Business System (IBS) using SAP softwares (machines) for SPPD's cost management and other systems.
rationalisation was that most of the overlapping product lines were phased out from each steel work, such as the Merchants Bar and rail products which were phased out from SPPD and became the operations of LPD.

With the divisionalisation of the BHP Steel group in 1985, an emphasis was given to "self-management" or "business unit management" by shifting centralised decision making authority towards decentralisation at the divisional level. Prior to that a lot of the decision making concerning planning and strategy formulations was done by the head office of the BHP-Steel group at Melbourne. A result of this, and since then, each division began to formulate their own strategies and planning. It was from that time that SPPD's management, including the costing team, became involved in a more positive way in improving their CMS.

There have been many discrete events that can be seen as attempts at improving SPPD's CMS during the period 1978 up to the formation of the quasi-laboratory (ie, Phoenix 21 project for IBS Development). From a costing point of view such developments can be described under the following sub-headings: (1) DISC System & Its Related Systems and Costing Concepts, (2) Planned Value Control Concept, (3) Other Systems, Programs and Reviews.

6.3.1 DISC System & Its Related Systems and Costing Concepts

On Friday 20 January 1978 the Board of Directors approved a submission recommending the introduction of a new management reporting system known as the DISC (Direct Integrated Standard Costing) system in BHP's Steel Division. At the same time SPPD (then the Australian Iron & Steel Co Pty Ltd) also adopted its divisional costing system. DISC is a Mainframe system which was advanced for its time, albeit complex like any other computerised system.

The basic philosophy that was adopted in the DISC system was the classification of costs into period and variable. In other words, the DISC system design supported a direct
(marginal) costing system. At the time, the concept was very popular for decision making, and also gaining popularity within BHP’s steel division.

Before the DISC system implementation SPPD used a 'fully absorbed costing' system. Introduction of a 'standard costing' system through DISC makes it possible for management to reflect more on responsibility accounting. This brought forth an attitudinal change to SPPD's costing system. According to a senior accountant (GS), before the introduction of DISC people were responsible for the incurrence of costs only, they were not responsible for any changes in "rates" such as BDC (Budgeted Direct Costs) or Planned Values (SPPD's terminology - as will be discussed later). Moreover, for example, sales variances due to international changes in competitive prices or some other events were seen as uncontrollable and even unknown to the organisation. If any change in usage rate such as labour usage rate or material price change occurred no responsibility for those changes was assigned and they were mostly considered as uncontrollable items (according to GS). They were seen as outside the control of users. Bringing in the standard rate concept into the costing system through DISC made management assigned responsibility for those rates to the people who were accountable for them. This was accomplished through a Variance reporting system.

In the DISC system there exists a complex variance reporting facility. A wide range of variances to account for the differences between planned objectives and actual achievements are a feature of variance reporting in the DISC system. The major categories of variances that are available in the DISC system include marketing, operating, purchasing, and others that are attributable to manufacturing (DISC Operating Guide, 1979). Marketing variances include selling price and products mix variances. Operating variances include material mix-controllable and non-controllable, yield, facility mix-controllable and non-controllable, efficiency, delay, spending and averaging variances. The other variances attributable to manufacturing were sub-divided into standard revision, reclassification and inventory adjustments. Details of such variance analyses are to be found in the operating guide.
manual of the DISC system. It is claimed that one of the major strengths of DISC is the
calculation of detailed variances. This is not to suggest that it is without limitations. In a
recent review SPPD's costing team found several limitations in the existing variance
reporting system (see Exhibit 6.2). Not only was variance reporting using DISC system
seen as problematic, but also, with the launching of the quasi-laboratory (ie, Phoenix 21
project), the costing team unveiled many other limitations. The indications of the
limitations as advanced are, by nature, specific to particular business processes.

Exhibit 6.2 Difficulties of Variance Calculation using DISC

| Complexity in the calculation of variances |
| Lack of understanding of variances          |
| Too many variances sent out to the users   |
| Lack of clear accountability for the variances calculated |
| Inability to aggregate variances for reporting purposes |
| Explanation of variances performed by the wrong departments |
| Analysis requires a long paper chase - no exception reporting is available |
| Lot of manual fixes - such as half yearly cost calculations. |
| Difficulties of separating fixed and variable costs |

[Company Data FD Version 1.0 4/10/91, p10]

It is to be remembered, however, that DISC is just a computerised system, the
functionality or inscriptions of which dictate a certain way of performing certain processes
in producing certain output. In other words, the design of CMS such as variance reporting
and their forecasting, cost reporting techniques (whether monthly or quarterly), designing
cost centre hierarchies, fields' usage and so on, has been done by using certain technology
(computer software - machines). Thus, it can be argued that the technology, at least
partially, dictates the design of CMS, and can be considered as propositional. In other
words, an emphasis on a particular technology dictates certain ways of designing business
processes of an organisation and hence the design of CMS. That is, a particular commercial
software package can dictate what functionality or inscriptions are followed in designing
CMS. However, this does not suggest that this is matched with a view of the contingency theory in accounting that MAS (Management Accounting System) design is dependent on "technology" (an independent variable). Quite the contrary.

In the DISC system, for example, there exist three fields (3*4 digit field) which are used to identify and categorise costs. The first four digits' field represents either a cost centre or an account number using a four digit numeric code (e.g., 0805 for BOS Steelmaking, 1313 for spares stock account at BOS Steelmaking). An alphanumeric followed by three digits' code is used to represent special account types, such as, Q123 for BOS Plant Capital account and X080 for Direct Purchase account. The second four digits field is used to represent an aggregated level cost element such as labour liquid steel handling and operating materials using a three digits numeric. The third field is used to further categorise the cost elements into a sub-group.

<table>
<thead>
<tr>
<th>Example:</th>
<th>First Field</th>
<th>Second Field</th>
<th>Third Field</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0805 BOS Steelmaking</td>
<td>/0012 Liquid Steel Handling Labour</td>
<td>/0001 Supervision</td>
</tr>
<tr>
<td></td>
<td></td>
<td>/0002 Relief Supervision</td>
<td>/0003 Ladle Operator</td>
</tr>
</tbody>
</table>

Similarly, we could show many examples to detail various inscriptions in carrying out certain business processes using the DISC system. What that can tell us is the uniqueness of a system's functionality. Thus, it can be argued that as far as the technical design is concerned it is the technology (computerised system) which dictates as well as limits the design of CMS. Certainly, the limitation is dependent on the nature of technology (i.e., computer package). If the package is flexible then CMS can also be designed with flexibility. However, my intention here is not to apprehend all the inscriptions of what the DISC system could do, rather, it is to provide an understanding of its development and

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4 However, it is not an argument that it is good or bad. Of course, by customising those software packages or in-house development, it is also possible to design particular contextual CMS and thus offer different inscriptions to follow.
changes that have been under 'translation' (Latour, 1987; Callon, 1986) since its original introduction in terms of both the systems and its costing principles.

The DISC system was advanced for its time and has since been extensively modified in order to improve the design of CMS. As well, parallel to the DISC modifications, there has been a series of feeder systems developments at SPPD. These feeder systems are developed either in-house or bought from outside software companies.

In fact, SPPD's existing cost management systems were designed on the principle of a series of "feeder systems", each performing their own individual functions, supplying data to a common data pool accessible for different purposes by a range of costing and related systems (Costing System Review, 1989). In particular, the major association of SPPD's existing costing systems comprise Cost Data Collection System (CCS), DISC System, Capital Costing System (CCC), General Ledger System (CLG) and numerous several feeder systems (see Figure 6.2). Examples of such feeder systems that are external to the costing and financial systems include: Direct Purchases, Cash Book, Mobile Equipment, Spares, Steel Issues, Refractories, General Stores, Engineering Work Administration System (EWAS), Engineering Drawing System (EDS), Manufacturing Services System (SYMAN), Foundry, Supply System (OLS), Maintenance Management System, Labour Costing (OLT & HR system), Car Mileage.

The DISC system runs on a mainframe computer operated from BHP's Melbourne office. It is a centralised management reporting system introduced for the whole of BHP's Steel group. The CCS, CCC and CLG are SPPD's in-house systems developed over the years after the introduction of DISC. All other feeder systems are PC based stand alone systems that are used to collect costs and process other information.

In SPPD, DISC is used for a broad range of information processing needs. For example, it acts as a subsidiary cost ledger to the general ledger. Moreover, it provides necessary process costing and cost control information. Special costing requirements are
addressed by separate systems, notably the Capital Costing System (incorporating limited Job Costing) and PC-based Product Costing System.

Figure 6.3  SPPD's Existing Costing Systems

The Costing System Review team (1989) concluded that there was nothing wrong with the existing costing system architecture. Rather, the team recommended that existing constraints were largely due to technology limitations including the lack of relational databases for convenient access to stored data. In addition, the team identified a number of deficiencies of the existing systems, such as:
• Errors and reporting delays limit their effectiveness for cost control
• Constraints on multi-level reporting limit effectiveness for responsibility accounting
• The systems are rigid and inconvenient
• Extensive manual processing
• Errors hard to trace
• Data inaccessible for special analysis
• Lack of integration, on-line processing, ready data access
• DISC is very complex, and both its concepts and associated terminology cause confusion
• Aggregation facilities are limited in DISC system.

In May 1990, there was another system implementation project commissioned at SPPP, known as BARS (BHP's Accounting and Reporting System). BARS is a centralised corporate reporting system of BHP. One of the main objectives of BARS's implementation was to establish a uniform reporting system with the corporate BHP. It went live in June 1990 by replacing SPPP's existing Business Reporting and Financial Statement Reporting systems. With the commissioning of the CMS stand alone project (that is, an early stage of the quasi-laboratory) in 1991 its operation temporarily has been shadowed.

DISC is a computerised system which brought forth many changes at SPPP and enables costing personnel to look forward to the development of their CMS, both in terms of systems and cost management principles. As indicated earlier, the basic philosophy that was adopted in the DISC system was the classification of costs into period and variable. Period costs were defined as the costs that do not vary with output, such as production volume, and the variable costs are those that do vary with the level of output. One of the major changes to this basic philosophy of the DISC system has been the change in the concept of period and variable to direct and overhead costs.

Change from "Period and Variable" Cost Concept to "Direct and Overhead"

In 1988 SPPP's costing team replaced the concept of period and variable costs with the concept of direct and overhead costs. This was done, in the main, to increase the
traceability of costs. A reason for adopting the concept of *direct and overhead* was, as explained by a senior accountant (GS):

*There was a major principle in the DISC system that broke up the costs into the period costs and variable costs. We changed that to overhead costs and direct costs. In 1988 the division had some A$300 million period costs. The concept of period cost was understood in a way as if all your time variable costs are period costs, and variable costs are only the tonnage variable costs. The concept, I guess was misunderstood in that everybody seems to think that period costs are overhead costs. This is just one example. Another example, Blast Furnace operating 24 hours a day where tonnage output could vary but labour is considered to be a period cost - it's a time variable cost. We did not like that approach. What we thought we wanted to know was our direct cost of manufacturing.*

This change of direction resulted in a significant shift in the cost structure at SPPD, moving many *period costs* into the category of *direct costs*. The *direct costs* are defined as "those costs (fixed or variable) that are directly associated with and directly chargeable to (rather than allocated or applied to) a particular product, job, process or production department or other segment of the overall production operations" (Company Minutes). There has been a suggestion for an amendment of this definition of *direct costs* by the costing team, that is, to include a *materiality* concept in costing so that at a certain minimum level (say at 80% level) costs can be chargeable to the objects (as stated in the definition). This meant that if the association of costs cannot be traced with certainty but can be traceable at a certain level of approximation then it was suggested to treat those costs as direct costs.\(^5\) *Overhead Costs* are defined as "those costs that cannot be directly identified with and directly chargeable to a particular product, job, process or production department." (Company Minutes)

This classification of costs into *direct* and *overhead* has been reflected through the recent design of cost centre types by the costing team of the quasi-laboratory. Such classifications are being reflected through the derivation of the following cost centre types.

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\(^5\) The proposition has not been approved up to the closing date of my field work.
(see figure 6.2), which would be a basis of the CMS structure in the forthcoming IBS implementation at SPPD.\textsuperscript{6}

\textbf{Figure 6.2}  Cost Centre Classifications.

As mentioned earlier, one of the main features of mapping cost centres and hence establishing a cost management structure is the numbering systems. In SPPD such a cost centre numbering convention is formatted with an eight digits' field denoted as XXYYYZ00. Where XX is the identifier of a cost centre type, YYY represents the cost centre number and the field Z is used to further sub-divide an existing cost centre into multiple cost centres. By default these numbers are zeros. For example, cost centre 07816000 represents a process cost centre (07), followed by the number of the cost centre (816) and (000) represents no further subdivision. This numbering system provides identifiers and a systematic way of arranging an organisation's business processes and activities at all levels, and manifest grouping of various activities in a hierarchical manner as needs be, thus, becoming what Latour (1987) refers to as a 'centre of calculation' or as

\textsuperscript{6} It seems a classification of \textbf{direct} and \textbf{non-direct} cost centre types may practically sound better than the classification of \textbf{direct} and \textbf{overhead}, though the ultimate classifications would remain the same.
'power' (Machiavellian-like). An example of such a numbering system is presented below (see Exhibit 6.3).

Exhibit 6.3  Cost Centre Numbering System

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>Non-SPPP Cost Centre</td>
</tr>
<tr>
<td>01</td>
<td>Hierarchy Cost Centre</td>
</tr>
<tr>
<td>02</td>
<td>Dummy/System Cost Centre</td>
</tr>
<tr>
<td>03</td>
<td>Administration Overhead Cost Centre</td>
</tr>
<tr>
<td>04</td>
<td>Manufacturing Overhead Cost Centre</td>
</tr>
<tr>
<td>05</td>
<td>Shop Cost Centre</td>
</tr>
<tr>
<td>06</td>
<td>Service Cost Centre</td>
</tr>
<tr>
<td>07</td>
<td>Process Cost Centre</td>
</tr>
<tr>
<td>P8</td>
<td>Product Cost Centre</td>
</tr>
<tr>
<td>09</td>
<td>Dispatch Cost Centre</td>
</tr>
<tr>
<td>10</td>
<td>Maintenance Cost Centre</td>
</tr>
<tr>
<td>W8</td>
<td>Warehouse Cost Centre</td>
</tr>
</tbody>
</table>

(Source: Company Data)

Back to Actual Costs from Standards

There was also a move towards "actual" costs for all costs except for services and in-process feed being at actual rates. That meant that to calculate the "planned values" many cost elements were charged at actual rate rather than at a predetermined rate. For example, labour cost was being charged at a weighted actual rate. The raw materials that feed directly into the production processes from an outside source are fed in at actual rates. These rates are manually calculated from the stock ledgers and entered into DISC, on a monthly basis. To ensure the elimination of rate variances on a monthly basis the planned costs are activated by the actual rates for the month.

6.3.2 Introduction of the Planned Value Control (PVC) Concept into the CMS Matrix

During the period 21 July through 8 August 1986, in accordance with a technical cooperation agreement, Nippon Steel Corporation (NSC) conducted a field study at SPPD for the introduction of Planned Value Control (PVC) into the CMS matrix of the steel works. Together with PVC, NSC also looked at the possibility of introducing Integrated
Quality Control systems of how these control systems could be positioned and used in SPPD as part of total quality control (TQC).

On the basis of the NSC's report (NSC, 1986), SPPD incorporated the PVC concept in their CMS matrix in order to improve the performance measurement feedback and feed forward control at all levels. It is a concept of setting co-ordinated plans and reviewing these plans regularly (at the time of this study, quarterly) against the actual performance.

The PVC concept was originally developed by Nippon Steel in Japan. The basic concept of PVC is the setting of specific "forward looking" targets for key parameters of operational and cost control and comparing actual performance with these targets. According to Cox (1989), "a key aspect is that these targets are not imposed from above but are set by those people responsible for that performance. These targets are called "Planned Values". The drive for continual improvement is an essential part of the setting of planned values."

![Figure 6.3 Planned Value Control (PVC) and PDCA Cycle](image)

The PVC concept supports PDCA cycle (see figure 6.3) in setting the Planned Values (PVs). It is a constitutive process. That is, by benchmarking the existing situations and current work practices it attempts to review PVs for a continuous improvement. At SPPD, it is described as a dynamic control mechanism. The utilisation of which philosophy is not
only limited to the finance and planning for controlling cost aspects, but also to manage and improve aspects such as production planning (capacity, productivity, time efficiency, etc), customer "value-chains" (Porter 1985) analysis, maintenance standards, yields evaluations, and various levels of performance measurements.

The PDCA cycle stands for 'Plan', 'Do', 'Check' and 'Act'. "Where 'plan' means to plan improvements in the present practices by using statistical tools such as the seven tools of quality control (pareto diagrams, cause and effect diagrams, histograms, control charts, scatter diagrams, graphs and check sheets). 'Do', on the other hand, incorporates the application of that plan, while 'Check' involves seeing if it has brought about the desired improvement. The action stage of the cycle requires preventing recurrence of old procedures and institutionalising the improvements as a new practice to improve upon." (Cox 1989)

It is claimed that PVC was one of the founding platforms for the introduction of Total Quality Control (TQC) at BHP-SPPP. As well, it has been considered a systematic and formalised way of improving CMS by encouraging cross functional involvements at all levels such as production, supply, maintenance, finance & planning and human resources departments. The focus of this is, however, not only to manage and improve cost aspects but also to better manage activities and business processes at SPPP; and, therefore, provide a platform for total commitment at all levels of the organisation.

Subsequent to the introduction of PVC a Planned Value Control department was institutionalised to monitor the regular reviews of Planned Values and report those to senior management. In reviewing these PVs the PVC department plays an important role in encouraging and supporting the personnel involved in its operation. In order to maintain such a role a steering group consisting of senior staff members from the Production Planning, Finance and Planning and Technical Support departments was formed. At various levels of the plant a hierarchy of PVC co-ordinators was also established to assist the activities of the PVC group. The introduction of the PVC concept led SPPP's people, in
particular, the Finance and Planning department, to broaden their understanding and relate various activities of their business to the several approaches/philosophies such as Total Quality Control (TQC), Total Performance Management (TPM) and Activity Based Management (ABM).

"The PDCA cycle goes round and round. No sooner is an improvement made than it becomes the standard to be challenged with new plans for further improvement" (Imai 1987, p21). In a subsequent period the existing performance is considered as standards and used as a benchmark for further improvement, thus, a concept of the SDCA (Standardise/Do/Check/Act) cycle. In other words, when the improvement process begins with the existing standards it starts with the SDCA cycle. On the other hand, when the process for improvement begins by evaluating the current work practices from scratch, it is referred to as a PDCA cycle. Whether one uses the SDCA or PDCA cycle, both aim at achieving a certain level of improvement in setting new targets and challenges.

Cox [a PVC accountant at SPPP] (1989, pp109-110) demonstrated that

At Nippon Steel, Planned Values are regarded as the embodiment of the willingness of departments to improve their operation and achieve their goals. They are not simply an extrapolation of the past but combine challenge with reality. Their foundation is on recent operating results, but they must allow for improvement and provide a challenge for the future. All departments (not just production departments) must constantly look for problems and discover the means for improvement, incorporating them into the planned values set. The positive participation of management and shop floor personnel should be encouraged in this process.

[Whereas] At SPPP, the Planned Value Control concept is used predominantly with the costing system. To the extent this has been to the concept's detriment, people have come to understand PVC to be the costing system itself. PVC does not represent a mean or format for representing costs to plant personnel. What it does offer is meaningful standards of performance against which costs can be compared for control purposes. PVC is in essence a philosophy. It offers ideas and concepts which can enhance the use within costing system as it is within any performance measurement system. Though not used to the same extent, the PVC concepts at SPPP have been used in financial budget setting, production planning and operational control, equipment maintenance, research and development, and new equipment plans. The aim is to bring all these plans together into a co-ordinated plan for the future of the steelworks. This is
represented by SPPP's Business plan, which forms a major foundation with which many performance aspects are compared.

From a costing and budgeting point of view these planned values are targets or standard values that form the basis of evaluating operating results. In a way, the PDCA cycle aims at formalising a process structure that enables active involvement and participation at all levels from top management down to the shop floor level. Thus, Cox (1989, p109) goes on to argue that,

".. an important aspect in introducing this concept is the attitudinal change required. People must understand that the established standard is merely a place to start in the process of improvement. Standards should not be perceived as fixed goals [not an end in itself, rather they should be used as means]. This step is not an easy one, for the ratchet effect of imposed tighter budgets still runs strong in the minds of many. The benefits here, however, are that the goals and standards are self imposed. At Nippon Steel, Planned Values are regarded as the embodiment of the willingness of departments to improve their operation and achieve their goals. They are not simply an extrapolation of the past but combine with reality (Nippon Steel, 1987, p16). Their foundation is on recent operating results, but they must allow for improvement and provide a challenge for the future. All departments (not just production departments) must constantly look for problems and discover the means for improvement, incorporating them into the planned values set. The positive participation of management and shop floor personnel should be encouraged in this process.

Setting Planned Values requires a dynamic involvement at all levels. Although the ability of the PVC concept can be enlarged to manage various facets of the business at SPPP, the predominant application has remained limited within the scope of the costing system with exceptions. In costing PVC is used for developing various PVs, such as material feed, production, delay, operating cost, standard process routes and standard price and rates. In addition, at SPPP the PVC concept has been used equally successfully in managing overtime, absenteeism, labour numbers and maintenance performance criterion such as labour gang manning, labour utilisation and forward work load planning. Moreover, at SPPP the PVC concept has also been used to measure such aspects as time efficiency of production processes, productivity and product yields.
At SPPP, since its incorporation, the PVC process has also become an integral part of the budgeting process, while the roles and functions of budgeting at SPPP are dictated by differing natures of its preparations and use. However, it has to be mentioned that this thesis is not about analysing the 'constitutive roles' that SPPP's budgeting might play. Rather, an indication here is that the PVC process plays a significant role in the budgeting process at SPPP.

Although with the commissioning of the Phoenix 21 project (the quasi-laboratory) the thrust of the PVC concept had temporarily been overshadowed, a revision of such a concept would not be far from a prototype exercise before the implementation of the Integrated Business System at SPPP.

An important conclusion that can be drawn from the above discussion on PVC is that the significance of the PVC concept as a philosophy for improving SPPP's CMS should not be negated. However, it has not been seen and operated without limitations. The Costing System Review (1989) team identified several problems concerning the operations of the PVC concept at SPPP. For example, it was stated that:

It is difficult to determine the effect of changes to planned values prior to submission and acceptance. The current method of setting PVs is unsatisfactory as it involves multiple handling of data. Changes to PVs are made without the users' knowledge. The time delay in effecting a change to a PV is unacceptable to the user departments. It takes 8 weeks for changes to be reflected in the cost reports. (Costing System Review, 1989)

This is a reason why SPPP's finance and planning department has looked forward to implement an IBS system to improve its CMS.

6.3.3 Other Systems, Programs and Reviews

During the 1980s there have been various initiatives from SPPP and its corporate BHP-Steel group for various systems developments and programs attempting to improve SPPP's CMS. Particularly, the involvement of PA Consulting Group in the late 1980s has not only resulted in numerous management programs being initiated over the years, but also
given management greater awareness and 'visibility' of their existing programs and systems. Pressures from the corporate BHP-Steel group in the late 1980s also resulted in numerous programs such as a performance management program. Moreover, the engaging of Marakon Associates in the late 1980s by BHP-Steel resulted in various programs such as working capital management and value based management programs, to improve the cost management practices throughout the BHP-Steel divisions.

During July and October 1989 the PA consulting group and SPPD's costing group jointly carried out a review of SPPD's existing cost management systems and its concepts and principles. There could be many reasons, economic imperatives, competitive pressures and other social forces that can give rise to carrying out the costing system review (CSR) in 1989. However, the CSR team stated the following reasons for the review:

- the inability of existing systems to accommodate changes,
- existing systems were not providing the information they required, and
- shortcoming of the costing systems revealed by recent studies and the ongoing MIS development (Costing System Review, 1989).

On completion of the examination of various business processes concerning CMS, the team reported their major findings and clarifications in a volume Costing Systems Review, together with six appendices (see CSR, 1989). The team identified and evaluated a diverse range of CMS information needs, scope, pros and cons of the existing CMS including feeder systems deficiencies, principles and procedures. For example, the team identified six categories of need for costing information, as exhibited below (see Exhibit 6.3).

The team also recommended a business process model for SPPD's CMS, called 'Proposed Costing Systems Architecture', as reproduced in figure 6.4. Although SPPD's finance and planning considered the team recommendations were valuable, they (at the time) left with the impression that these were just paper work! However, a greater awareness of their CMS practice was in place with the completion of the CSR.
Exhibit 6.3 Generic Need for SPPD's Costing Systems

- Business unit management
- Management performance evaluation
- Cost control, the major impact being in the areas of
  - Operations' planning and scheduling
  - Expenditure control (eg. capital projects)
- Marketing planning, especially
  - Pricing, price justification
  - Market entry/exit decisions (products, segments, customers)
- Non-routine decision making, including
  - Capacity planning
  - Project evaluation/business planning
- External reporting including
  - Stock valuation
  - Capital accounting

(Source: Costing System Review Draft, 1989, p36)

This CSR in 1989 provided the impetus for the initial "jolt/kick" or "environmental disturbances" for the possibilities of replacing the old "technologies" (DISC and other systems) at SPPD. In fact, at SPPD, it is from this CSR that the initiative of forming the quasi-laboratory (ie, Phoenix 21 project) for implementing an Integrated CMS emerged.
During the period 1978 to 1989 there were many events (in terms of systems and programs) that might be seen as CMS development at SPPD. However, the analyses of all the details of the existing systems and programs that can be included in the CMS matrix at SPPD were not attempted. Rather, as has been indicated earlier (see chapter four), a major focus of this study is to examine the various "fact-building" processes of the quasi-laboratory which were engaged in fabricating an integrated CMS using SAP's software packages at SPPD. The outcome of this examination will be presented in the forthcoming chapters.

6.4 Summary and Conclusions

This chapter has addressed the cost management systems (CMS) development of the researched organisation (ie, BHP-SPPD) since 1978 when, for the first time, it moved into a Mainframe CMS for its internal data processing and management reporting purposes, but it was until 1989 that a complete review of the existing costing systems was conducted jointly by SPPD and the PA Consulting group. That is, up to the period prior to the initiative of fabricating an integrated CMS (or the initiative of forming the quasi laboratory) at SPPD.

It is envisaged that although SPPD's understanding of CMS reinforces and focuses on many 'constitutive roles' such as the fulfilment of strategic, operational and financial information requirements, the immediate concern of the CMS development was with the development of 'technologies', that is, computer systems for internal data processing including costing systems. This has been elaborated in section 6.2.

One of the main features of SPPD's existing CMS is that it was designed on the principle of a series of "feeder systems" each performing their own individual functions, supplying data to a common data pool accessible for different purposes by a range of costing and related systems. This is examined in section 6.3.1

It is also indicated that along with the developments of "technologies" (computer systems for data processing) there were various changes in costing concepts and principles
at SPPD over the years such as the change from the *period and variable* cost concept to the *direct and overhead* concept.

An important conclusion is that in a mainframe environment establishing a cost management structure through specifying differing types of cost centre numbering systems is essential. This numbering system provides identifiers and a systematic way of arranging the organisation's business processes and activities at all levels. That is, by grouping various activities in a hierarchical order access to the information on a real time basis can be made possible, which can be seen as what Latour (1987) preaches as a "centre of calculation".

Moreover, an important incorporation into the CMS matrix at SPPD was the Planned Value Control (PVC) concept in 1986. Such a development is examined in section 6.3.2.

Finally, section 6.3.3 has addressed various initiatives in terms of systems development, programs and projects by SPPD and its corporate BHP-Steel group in order to improve their CMS practice.
Chapter 7
Fabricating CMS at SPPD: Trial for a Stand Alone Costing Systems' Development Using SAP Technology

7.1 Introduction

As elaborated in the previous chapter, there are a number of discursive conditions out of which emerged the possibility of fabricating the CMS at SPPD, which resulted in forming the "quasi-laboratory" (ie, Phoenix 21 project). In particular, the initial impetus for forming the quasi-laboratory can be seen activated or inherited from the costing system review (CSR) in 1989, a study jointly conducted by PA consulting group and SPPD's costing team. This CSR team unveiled many problems of the existing CMS technologies at SPPD including the lack of multiple handling of data, problems in job numbering system, complexity of variance analysis, inaccurate measurement and allocations of costs, and the use of inconsistent terminologies. It is also recognised that the existing costing systems at SPPD have several generic systems' problems such as the lack of integration within the sub-systems, on-line access and validation at source, on-line audit trail, security and data integrity.

Having recognised the lack of the existing data processing technologies, the costing team focused on the urgency of developing an integrated system which could supply and manage an on-line, real time, flexible and user friendly CMS at SPPD. In an endeavour to do so, in April 1990 the costing team examined the possibility of overcoming the technological incapacity by in-house development. Following this examination, during May and June 1990, a team called "commercial-in-confidence" visited ten related world class companies in the UK and the USA. The visit not only provided a greater awareness concerning the contemporary practices of CMS but also made them compare the related SPPD's competitors' data processing technologies in regard to managing cost management and other systems. This was followed by the selection of SAP system and a preliminary evaluation which was carried out during August and September 1990.
In February 1991, the costing team drew a plan for developing and implementing a stand alone cost management system using the SAP commercial software. A scope of the developmental plan was also outlined. By March 1991, a formal organisation which I call 'quasi-laboratory' was formed with the approval of the group general manager, approving the "CSR stage-I conceptual and detailed design's scope". As mentioned earlier, one of the central purposes of forming this quasi-laboratory was to prototype the suitability of SAP system in order to replace SPPD's existing data processing technologies for cost management and other systems. Although the initiative for its formation was activated by the Finance and Planning department, at a later date a steering committee was formed combining non-finance senior executive officers (SEO) in order to develop, have authorised and progressively install an improved cost management process and philosophy consistent with SPPD's needs. The responsibility and decision making authority on the matters of the quasi-laboratory has been attributed to this steering committee. In other words, as will be elaborated in this chapter, it is this steering committee which has been acting as an "interessement device" (Latour 1987) for all matters concerning the proposed implementation of the CMS (at a later date IBS) at SPPD using SAP technology.

This chapter is organised into two major sections. The earlier sections examine the processes and events prior to and including the formation of the quasi-laboratory. The later sections examine the initial fabrication processes of the quasi-laboratory covering the period March 1991 to June 1992 when a trial for implementing the stand alone CMS using SAP technology was undertaken at SPPD. What are the multiple happenings of such a fabrication? The chapter finally examines why the trial for the stand alone CMS development did not succeed.

7.2 Visits to World Class Companies in the UK and the USA

Following the costing system review (CSR) in 1989 which recognised the widespread criticisms of the existing costing systems' architectures, during the period 21 May to 1 June
1990 a group consisting of three SEOs (senior executive officers), two from BHP-SPPD and one from BHP-IT, visited ten world class companies in order to gain a greater understanding of the CMS practices. Among the ten companies they visited, four of them were in the UK and six were in the USA including two consulting firms. The outcomes of the visit were reported in a volume. [A summary of the report is presented in Appendix 2].

It not only reflected on the CMS practices of the companies they visited but also provided examples by comparing SPPD's existing CMS practices. However, some general findings, as extracted from the report, are as follows:

- No company [which they visited] has shown a clear lead in all areas of cost management systems. Rather, the companies have been developing in areas of their need and status of existing systems - which ranges from delivery system to strategic costing information, a considerable amount of prototype with pilot exercises being the norm.

- Costing information is used to meet differing needs such as fulfilling financial, operational and strategic requirements.

- Performance reporting systems were focused on business requirements with special emphasis on the effective use of performance management being widely recognised.

- On cost reporting, the companies are experiencing problems such as accuracy and credibility of costing information, timeliness of information, inability to measure and audit trail issues regarding stored information.

- Centralised commercial systems (profit and budget reporting, sales, payroll and purchasing) across divisions within a company were the practice.

- Activity Based Costing primarily used for (i) strategic costing such as product and target costing, and (ii) cross functional analysis to identify value and non-value adding activities.

- Design of management and performance reporting system not entirely done by Finance & Planning department - team efforts with finance participation.

- For management information system - use of Mainframe for data collection with processing occurring on PC and departmental computers. The companies are attempting to move towards commercial packages wherever possible with features such as low risk, lower cost and quicker implementation.

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1 The name of the companies as cited in Appendix 2 are named as A through J respectively to represent the companies they visited. An interesting aspect of this report is that it is a representation of the real actors (commercial-in-confidence) who visited ten related world class companies in order to improve their "organisation of social life" (Habermas 1984, 1987) or organisational practice of CMS. In other words, a world class company (the researched organisation) investigated its related competitors' cost management practices in order to improve its own cost management practice.
• Reliance on non-financial KPIs (Key Performance Indicators) - many KPI's being introduced by line personnel to enable them to monitor their performance daily and weekly, and emphasis given down to the shop floor.

• Strong focus on customer requirements with systems design and reporting on issues such as customers' requirements of delivery, lead times, scheduling, and quality.

• Focus on managing organisational change and recognition of difficulties of interfacing various stand alone systems.

• Operating personnel were taking a higher profile role.

• More emphasis on performance reporting in the case of overseas branches than cost reporting.

• Recognition for an increasing needs to co-ordinate differing groups such as production scheduling and total performance management.

• There is a recognition for consistency in approach to central data base. Overall recognition for better understanding and better uses of cost management as a strategic tool and where it fits into overall future direction of the company.

• Each organisation has its strengths and is looking to develop from different starting points.

From the above findings it can be easily demonstrated that today's cost management practice has not only been focusing on the "constitutive roles" of managing cost management and other business activities of an organisation, but also on the technological incapacity to achieving its effectiveness. Likewise, in addition to demonstrating the constitutive roles of the CMS, since the costing system review (CSR) in 1989 a wide range of demonstrations have taken place at SPPD focusing on the technological incapacities of their existing data processing technologies for cost management and other systems. However, the problem for the CSR and subsequent teams was how to resolve such incapacities. In particular, the question was whether the technological incapacities would be overcome by in-house development or by moving towards commercial packages.

Raising these two alternative possibilities, early in 1990 the CSR team explored the possibilities of in-house development of computer systems. The proposition for the in-house development did not succeed on the ground of cost and time it might require to develop such systems. Subsequently, a decision was taken to visit some related world class companies in order to enhance understanding of the CMS practices.
From the visit, the team unveiled that companies were attempting to move towards commercial packages for CMS data processing technology with features such as low cost and quicker implementation. This was also confirmed by the project co-ordinator of the stand alone CMS development project, GS, while responding to one of my questions:

*As you know I was originally involved in establishing the project [ie, the quasi-laboratory] which was a costing project to replace our DISC costing system. While reviewing our old costing system, at that time, we saw that there were major changes happening in Integrated Business Systems and in commercial software packages rather than in-house developments. So, that was a new direction that SPPD had to consider. (See Geoff Shaw’s Interview dated 26 February 1993 - Appendix 3)*

While visiting companies in the UK the team gathered information that the SAP commercial software package was used world-wide by many world class companies in order to manage data processing for various business applications (see chapter five for the differing range of SAP’s application software). From company G (a world wide consultancy firm - see Appendix 2) the team gathered the following information about the SAP system:

SAP seems to be about 5 years ahead of other packages in the market, however, it is more difficult than most to implement. Difficulties stem from the integration of non-SAP components. SAP imposes a need for a high level of integrity on the systems with which it interfaces. This feature helps to drive responsibility for data quality back out to the source. The software is seen by most as a strategic direction - its strength lies in its integration across the range of business systems. (Visit to USA and UK, Vol. 1, p64).

Gathering the above information, on 30 May 1990 the team visited the company H (an oil company - see Appendix 2) in the UK, which had already installed SAP’s general ledger (RF-GL) system and, at the time, were looking forward to implementing SAP’s other business packages such as sales reporting (RV), material management (RM-Mat), assets management (RA), project management (RK-P), accounts payable, operating results' analysis (RK-E) and other cost management (RK-S) modules. Although company H is engaged in non-related business with SPPD, the purpose of the visit by the "commercial-in-confidence" team to company H was mainly to gather information on the SAP system's applications. The team contacted three personnel of company H. They were: the manager
systems and control division, an executive of the system installation department and the
senior application adviser of company H.

The team quoted the following comments by an executive (Graham Collier) of the
Systems Installation Department of company H:

Before SAP [installation] we [company H] tended to not only specify what
we wanted a system to do, we also specified the way we wanted it to do it.
This is a classic mistake - we should have focused on the business need -
otherwise you get too tied up in the detail.

SAP displayed enormous strengths in the financial area. To introduce it we
put in place an intermediate group to handle the transition from no
information to more than could be handled. This intermediate group
received the system outputs and in a controlled manner, progressively
introduced them to their intended audience, in the mean time ensuring that
the available information was properly utilised. (Visit to USA & UK, Vol 1,
p69)

The team also reported some of the concerns that were expressed by Company H about
the SAP system, which include:

- SAP is perhaps not quite so strong in the marketing area as their
  competitors (M&D, CA, QSP) but they have a demonstrated ability to
deriver the goods.
- SAP has grown through the development of their single product [R/2
  Basis system] and their strength lies in the integrated nature of the
various offerings and the technical backing which pervades the company,
right through to the managing directors.
- Good level of service and support from a quality support team.
- Very reliable systems (only 4 package related crashes in 4 years).
- We (company H) do not encourage users' written reports.
- If resources permit - go for the "Big Bang" implementation. Incremental
implementations have an effect on staff which is like running the hurdles
after completing a marathon.
- Some screens are difficult to use for occasional users. Most users soon
become familiar with and like the package, although first look can be
daunting. (Visit to USA & UK, Vol 1, p70)

The team also viewed that Company H had a number of "false starts" before the actual
implementation of the SAP system. They further commented that company H began with a
small installation, and as they demanded more of SAP's modules they found "SAP to be
special". Also noted was the reason why company H selected SAP's software:
It has an ability to integrate modules. That is, develop each module separately and integrate on need. *Company H* actually started with fixed asset management then went on and developed purchasing, inventory management, accounts payable, general ledger and costing systems. Next move [to them] will be sales and materials management. (Visit to USA & UK, Vol 1, p70)

At the time, the team had doubts about the SAP system's user friendliness. They also viewed that interfacing existing systems with SAP might be difficult. Although these sceptical views were unsurprising, there were appraisals as well, such as - "SAP system is reliable", "it is a proven package", "go for a big bang implementation", "SAP system is a big bang system" and so on.

Following the visit, however, a tender for commercial software packages to replace SPPD's existing CMS data processing technologies was called for.

### 7.3 Tender for "Machines" - Presentations, Showdowns and Evaluations

In response to a question "when did you join the quasi-laboratory?", Bill Martinoski, a group leader of the stand alone CMS development project, stated:

> As you know, the initial stage of this project started in June 1989. I was basically involved since the beginning of the project. At the time, it was called costing system review project. We conducted an interview workshop to identify problems or constraints of the DISC system. We identified many feeder system problems. We conducted this in a joint study with a consulting group called PA consultancy group, Australia.

> In May 1990 we investigated FACTS (Financial and Costing Transactions) to see three features such as (1) accuracy, (2) reliability and (3) accessibility. It was not meant to be a costing system rather pooling data available to use in the investigation.

> We also evaluate software packages on OLAS (On-Line Accounting System). This is done by a consultancy company called Quality Software Computer Associates. Documentations have been taken from three software companies such as (1) Walker Industry, (2) Dunn & Brad Street and (3) SAP AG International Ltd.

> SAP was selected for evaluation in September 1990. Initially, we develop our system requirements throughout this evaluation. Training also involved. During Feb/March 1991 the project was approved for implementation as a stand alone costing system, especially concentrating on the budgeting and costing areas. We
did not prototype other systems at the time such as RM (Warehouse Management), Production, RV (Sales) systems.

As you can see, it is from June/July 1992 we have been looking at the implementation of an integrated business system (IBS). Of course, the final acceptance of which is subject to approval by the group general manager. (BM Interview on 4 September 1992 - see Appendix 3)

In September 1990 the task of evaluating the SAP system was assigned to a review team which consisted of seven personnel - five from the Finance and Planning department and two from BHP-IT. From the initial showdowns and presentations made by SAP International AG (hereinafter SAP) the team submitted an evaluation report (a part of which will be presented below). It was an evaluation for "convincing technical choices" of SAP system functionality over the existing technology from the SPPD's costing and budgeting point of view.

The team reported that 'SAP package is an integrated system' and its success is based on the integration and the interdependency of all of its modules.² Arguably, the abilities of an integrated CMS are to a large extent determined by the systems of classifying cost (see chapter six) and other segmental information in a manner that permits easy access to stored data on a real time basis. This requires organisations to be structured with different segments so that unique information can be kept and retrieved when required. In the SAP system there are four such segmental hierarchical levels available. Each segment is an identifier of particular classified hierarchical information. Figure 7.1 is representative of an integrated CMS structure of the SAP system.

Segment A in figure 7.1 is representative of an identifier for a client or group company. Segment B is an identifier for a company (or subsidiary company). Segment C represents "Plant" in the case of RM (material masters and equipment management RM-INST) and fiscal year or business area in the case of general ledger master file management. Segment D is an identifier of a storage location, which resides in the material master file. Since the

² Most of the members in the quasi-laboratory who I interviewed also felt the same. That is, the SAP system is an integrated system (see Appendix 3).
cost accounting system in SAP is designed only for one company, therefore all cost centre hierarchies come under the company segment, that is, \textit{B-Segment}.

An example of how SAP's RF general ledger hierarchy system works is briefly as follows. In SAP's RF general ledger system each installation can have up to 99 clients, each client can have up to 99 companies and each company can have up to 99 years. Each segment contains several levels of information which can be customised to satisfy specific needs of the organisation. For example, \textit{A-Segment} contains more general client level information such as several fields which are used for account name, account group, blocking and deletion indicators of an account. The \textit{B-Segment} contains many fields which are used to control processing of various system's applications and reside at the company level.\footnote{This segment is used for such information as creation date of an account and who created it and account category (that is, whether an account is used in the cash management system or used at the cost element levels); segment control (that is - whether the account is a current account or a resident account and whether the user can make direct entries or the system can make direct entry, and whether the account is a control account for sub-ledger and so on); currency information, account classifications (ie, whether it is a} The \textit{C-Segment} contains information about the monthly activity of the account.
masters. This segment needs to be created for each financial year. As well, this segment contains several fields of information such as date of creating the account and the user name, currency and creation periods.

This segmental information is used to maintain the account master file in the general ledger system. To maintain these hierarchies several transactions need to be run and tables to be set up. The SAP system is a table driven system. There are numerous technical details (inscriptions) of these operations.

Not only had the team looked at the SAP system's integration facilities but also gathered various information such as its success rate with other users, its response time, drills down facilities and user friendliness. Despite gathering information about the new technological possibilities, at that stage (ie, September 1990), the team had doubts about the "invisible" (ie, SAP system). In other words, at that point in time the image they had of the specification of the technological products was somewhat "fragile" (Mehan and Wood 1975), which can be considered as "weak or hesitant possibilities" (Preston et al, 1992) of the fabrication process. This is not surprising. Theoretically, it is consistent with Latour's (1987) inculcation - "when new technological possibilities are created there is always uncertainty and dispute about their qualities and the likely effects" (Preston et al, 1992, 574). The report submitted by the preliminary SAP evaluation team after attending the first round presentations by SAP supports this notion.

A part of this report is as follows:

4 A transaction in the SAP system means a series of steps that leads to accomplishing a certain task. That is, a transaction usually consists of several screens. For example, one can use transactions to create an invoice, display a maintenance plan or a cost centre plan, etc. Each transaction has a particular code. In the SAP system transaction codes are represented by four character symbols such as "Tm08, TK31, TL11, TB03". Where the transaction Tm08 is used to call up tables, Tk31 calls up cost centre planning, while TB03 is used for posting a financial entry. There are numerous such transactions which are the key to call up and operate a particular business process.
The original time table for the SAP evaluation did not proceed as anticipated. Unfortunately the presentation by SAP fell short of expectations. The review team were informed that SAP would provide a working example of SAP modules utilising SPPD's data (which had already been supplied).

At the end of the session on the 18th, all process costing issues, including budgeting, variance analysis, etc had been covered. This, however, left the review team unsure as to SAP's ability to meet SPPD's specific requirements as documented.

We took a decision to cancel the session scheduled for 20/9, and 21/9 to concentrate on our core costing requirements.

We proceeded in the following manner on the 19/9 and 20/9
- overview of the SAP job order costing module
- recapped the SAP cost centre accounting module in specific detail with reference to SPPD's requirements.
- discussed SAP's ability to meet each point outlined in section 4.3, 4.4, 4.6, of our requirements document.

On the last day, 21/9, we received a general overview of the sessions we had cancelled earlier, such as Accounts Payable, Project Costing, Maintenance Costing, Product Costing, as well as their Income Analysis Modules.

SAP appears to be able to address most of the costing requirements specified in our document. The methods used within SAP to address those requirements however, are difficult to assess. The sessions we have been exposed to have raised many more issues.

The only option available, that will enable a firm decision regarding SAP's suitability, is to proceed with a prototype model. This prototype model will be a simulation of SPPD's costing requirements within the SAP package. Issues regarding interfaces and modifications to existing systems will also be addressed.

SPPD and IT personnel must undertake a series of SAP training sessions in order to learn how to use the SAP system to be able to carry out the prototype...

Conclusion

Overall, SAP's package capability in relation to meeting our requirements, was difficult to assess.

This difficulty stems from issues such as terminology and definitions, to screen layouts and the general impression that SAP will be difficult for the average person to use.

Also, in providing solutions to our requirements, a number of alternative methods were suggested by SAP.

Obviously, an overview of a new system is daunting, and familiarity may overcome the perceived problems of use.

A "hands on" working example, is therefore necessary to assess SAP's suitability in meeting SPPD's requirements.

SAP has an intricate system that shows potential in meeting our requirements.

It is obvious a package will never be an exact fit. The Cost System Review team's prototype must assess the impact within SPPD in changing our current systems and procedures to accommodate SAP's structure.

[Source: Company Data - Report on SAP Presentation, September 1990]
This initial report shows how a few "hesitant" individuals took the initial responsibility for evaluating a new data processing technology (ie, the SAP system) for CMS development at SPPD. From the conclusion drawn in the above report, on the one hand, the team was apparently of the opinion that the task of implementing SAP technology for SPPD's CMS would be daunting. On the other, it shows that the team and the management did not abandon hope of knowing more about SAP's potentiality for such a replacement. Rather, they sought more resources, showdowns, prototypes and training in order to learn, become familiar with and understand the SAP system.

During October through November 1990 further demonstrations and training were taking place on some SAP R/2 Basis system's modules in costing and financial accounting areas such as On-Line Functions (RS 210), Cost Centre Accounting (RK 010), Cost Centre Planning (RK 020), Job Order Accounting (RK 110) and Job Order Settlement (RK 112).

Table 7.1 Contents of Initial Enquiries from SAP

<table>
<thead>
<tr>
<th>General Systems Features</th>
<th>Costing Requirements</th>
<th>General Ledger Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems Compatibility</td>
<td>Account and Job Numbering system</td>
<td>Chart of Accounts - General</td>
</tr>
<tr>
<td>Processing Requirements</td>
<td>Management Reporting Hierarchy</td>
<td>Chart of Accounts</td>
</tr>
<tr>
<td>Access Control</td>
<td>Profit Centres/Cost Centres/</td>
<td>Masterfile Maintenance</td>
</tr>
<tr>
<td>Audit Trails</td>
<td>Business Units</td>
<td>Journal Entry</td>
</tr>
<tr>
<td>Technical Requirements</td>
<td>Budgeting</td>
<td>Account Enquiry</td>
</tr>
<tr>
<td>Validity Checks</td>
<td>Variance Analysis</td>
<td>Budgeting</td>
</tr>
<tr>
<td>System Administration</td>
<td>Stock Ledgers</td>
<td>Consolidations</td>
</tr>
<tr>
<td>Ongoing System Support</td>
<td>Process Costing</td>
<td>Closings</td>
</tr>
<tr>
<td>History</td>
<td>Product Costing</td>
<td>Foreign Currencies</td>
</tr>
<tr>
<td>Implementation</td>
<td>Job Costing</td>
<td>Miscellaneous</td>
</tr>
<tr>
<td>Future Growth</td>
<td>Service Centre Costing</td>
<td>Report Writers</td>
</tr>
<tr>
<td></td>
<td>Maintenance Costing</td>
<td>Reporting</td>
</tr>
<tr>
<td></td>
<td>Capital Costing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>R &amp; D Costing</td>
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<tr>
<td></td>
<td>Activity Based Costing</td>
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<tr>
<td></td>
<td>Opportunity Costing</td>
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<tr>
<td></td>
<td>Labour Costing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Requirements</td>
<td></td>
</tr>
</tbody>
</table>

(Source: These contents are filtered from SAP's written response to SPPD, January 1991)

On return from the training courses at that round, the costing team prepared a document which contained descriptions of the functional requirements of SPPD's CMS to be implemented using SAP system. Certainly, it was prepared based on what they could
gather and see as significant at the time. On the basis of these functional requirements, at a later date, a set of questionnaires were prepared seeking a response from SAP. The questions were stacked ranging from general overview of the system, general features of the system and concerning costing and general ledger requirements. A list of contents from which the initial questionnaire was prepared by the team at the time was shown in Table 7.1.

For each of these contents there were several queries seeking a response from SAP. However, these initial queries were "only the beginning of a long battle" (Chua 1993) for implementing an integrated CMS at SPPD using SAP technology.

7.4 Fabricating a Stand Alone CMS Development using the SAP System: A Trial

After some preliminary evaluations on some SAP system's modules and obtaining a written response from SAP about some of the initial queries (see Table 7.1), it was in February 1991 that the costing team (ie, Finance and Planning department) took a decision to prototype the suitability of the SAP system in replacing SPPD's existing CMS technologies, that is, the DISC and other feeder systems (see chapter six).

After obtaining a formal approval from the group general manager, it was in March 1991 that a quasi-laboratory was formed. The formal name of the quasi-laboratory was kept as the Phoenix 21 Project. A reason why the name of the quasi-laboratory was labelled as "Phoenix 21" was to demonstrate that the forthcoming CMS (at a later date IBS) implementation would inherit SPPD's data processing technologies well ahead to the twenty first century.

Following the formation of the quasi-laboratory, a plan for the "cost system review - stage I implementation" was demonstrated (see figure 7.2) and a structure for the quasi-laboratory was designed (see figure 7.3).

The CSR Stage-I implementation plan suggests that during March through May 1991 the structure of the quasi-laboratory was supposed to be put in place. However, I collected
a copy of the project's structure (ie, an early stage of the quasi-laboratory) which has the
date 1 November 1991 printed on it. Figure 7.3 is representative of such a structure.

Figure 7.2 Phoenix 21 Implementation Plan (Source: Company Data)

![Figure 7.2](image)

Figure 7.3 Initial Structure of the Quasi-laboratory (Source: Company Data)
7.4.1 Fabrication via Conceptual Design

The fabrication of the CMS at SPPD had begun since the CSR in 1989, 'in the conversations of individuals', 'in working parties', 'in meetings restricted to small groups', in consultations with consultants (such as PA consultancy Group, SAP consultancy and others) and 'in contained pilot or trial settings' (cf. Preston et al, 1992) before the formation of the quasi-laboratory. However, it was only after the formal approval of the quasi-laboratory in March 1991 that the "fact-building" processes of the stand alone CMS development at SPPD started by incorporating a few modules of the SAP system into the areas of costing, financial accounting and material management.

Table 7.2 Some Initial Conceptual Design Issues of Fabricating the Stand Alone CMS

<table>
<thead>
<tr>
<th>Design Issues*</th>
<th>SAP R/2 Basis System Modules**</th>
<th>Design Issues*</th>
<th>SAP R/2 Basis System Modules**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cost Centres and Hierarchy</td>
<td>RK-S</td>
<td>10. Standards/Policies</td>
<td>RF, RK-S, RM-MAT, RK-A</td>
</tr>
<tr>
<td>7. Stock Ledger</td>
<td>RM-MAT</td>
<td>16. Labour Costing Redevelopment</td>
<td>(Not Specified)</td>
</tr>
<tr>
<td>8. Budgeting</td>
<td>RK-S</td>
<td>17. Job Costing</td>
<td>RK-A</td>
</tr>
<tr>
<td>9. System Administration</td>
<td>RF, RK-S, RK-A, RM-MAT</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Each design issue has several business processes to be managed.
** The symbols are German acronyms such as RF module is a general ledger system and so on (see chapter five).

It took some time to map the resources and actors to be employed in the laboratory. As an initial step the costing team (ie, the initial fact-builders of the quasi-laboratory) allowed some time for the "conceptual design" (see Figure 7.2) of the proposed implementation of the CMS at SPPD. This conceptual design stage of fabricating the stand alone CMS was primarily set out for identifying the weaknesses and strengths of the existing systems and
procedures, and for defining the terminology and scope of the work. Initially, there were various discussion papers which dealt with depicting the scope of the laboratory. However, to begin with, at the time the team identified 17 stand alone conceptual design (CD) costing issues to be looked at (see Table 7.2). The initial structure of the quasi-laboratory was in fact designed based on those identified requirements which were aligned to fit SAP systems' requirements.

There had been a series of discussion forums and meetings to prototype the above stand alone costing issues. Outcomes of these prototypes resulted in numerous documents on each of these CD issues.

During June through July 1991, for example, several discussion forums had taken place on the 'training issue' (which was one of the seventeen CD issues) of fabricating CMS by implementing SAP's commercial software packages. Various tactics were followed to prototype and lead the discussion on the training issue. As evidenced from a discussion paper (ie, a costing system updates dated 24 June 1991), there were several tactics followed to lead the discussions and prototype the training issue concerning fabricating CMS at SPPD using the SAP system. These tactics included: (1) preamble and general discussion, (2) issues and questions to be resolved, (3) work breakdown for training and project awareness, (4) recommendations, (5) reasons and justification for recommendations, (6) system administration and its role and functions and (7) comments and opinions.

Various deliverables were the subjects of discussion on the training issue under each of these above tactics. For example, at the time, under the preamble and general discussion tactic the following deliverables were put forward on training:

*In order for a successful implementation of SAP to occur, one of the identified CSFs (Critical Success Factors) is training, must have been completed, and completed successfully.*

*This cannot occur unless a clear and obtainable training policy and plan are in place. The plan must be able to cater for the following objectives: initial training of SPPD's end-users, ongoing training of BHP-SPPD end-users, initial training to BHP-IT groups, ongoing training of BHP-IT groups; responsibility of training; creating and maintaining awareness of the project among SPPD and BHP-IT staff; responsibility for communication, Training*
Concerns about the issues and questions to be resolved for training, at the time, were focused on by stacking the following:

In order for the training plan to be completed during the Detail Design phase the following should be resolved during Conceptual Design.

(a) Who will handle initial end-user training - [whether it would be] Project Team (assumne full time trainer as part of the project team) or Internal training group or External training group.
(b) Who will handle ongoing end-user training - [whether it would be] SPPD's end user; [or] Internal training group; [or] a combination of both.
(c) If an Internal training group [is selected], which group? BHP-SPPD or BHP-IT?
(d) If an external group, which one? BHP-IT Melbourne, [or] SAP consulting, [or] Anderson Consulting; [or] others.
(e) Who will handle initial and ongoing BHP-IT training? [What about the issues such as] facilities, operations, help desk, security, system development.
(f) What impact will BHP-IT's market strategy have on programmer training (for the external market) and programmer training (for the project).
(g) [What about] printing policies. [Whether it would be] external or internal. [What about] the training aids - non standards requests.
(h) [What about the] project awareness? What proportion of training budget has to be allocated for this. (Source: costing system update dated 24 June 1991)

The work breakdown for training, at the time, was framed and staged with the following deliverables:

(a) Each of the 15 Conceptual Design areas should allocate a component of work to gather the following information: How many end-users will require access to SAP; What type of access will be required eg, update or display; [what should be the] level of computer sophistication; [who are] end users and their locations.
(b) Once this [above] information is gathered a training MATRIX can be constructed and reviewed. [That is] SAP functions [can be] linked to - users, access requirements, course type needed, pre-requisite courses, literacy courses, Basic knowledge courses;
(c) Once the Matrix is complete the individual types can be designed. This will include - method, content, responsibility, target group, target level, objectives, duration, pre-requisites, security, location, documentation, deliverables, system availability, system load, presenters, number of courses per group and scope of each group.
(d) Design course schedule taking into account - pre-requisite courses, order of courses, end-user availability, simultaneous courses, course tutor availability.
(e) Assign tentative date with regard to project schedule and critical path. Confirm training facilities, block book if required, identify training aids.
(f) Assign responsibility for co-ordinating above tasks. (Source: costing system update dated 24 June 1991)

The deliverables on work breakdown for project awareness for training at the time were focused on the following:

(a) Ascertain 'project awareness' scope, [that is] - (i) how often - ad hoc or monthly, [deliver] milestones; (ii) what type of print, poster and video [should be displayed; (iii) what [should be the] media [of publication] - BHP review, inserts into article
At the time, the **recommendations** tactic for training conceptual design issue was staged and framed by raising and stacking the following concerns:

(a) Initial end-user training should be done by the project team with the assistance of a full time trainer who should be allocated and identified by the end of conceptual design phase.

(b) Ongoing end-user training should be done by an experienced end-user for new end-users where their numbers are 2 or less.

(c) Ongoing end-user training should be by the SPPD training group where end-user numbers are greater than 2 and where refresher and advanced courses are being run for experienced end-users.

(d) Initial end user training should be held off-site, e.g. BHP-IT building 3 training room, where 15-18 people can be accommodated with terminals such as SPPD Cabana and BHP Conference centre.

(e) Ongoing end-user training should be in the work environment for 1 or 2 people.

(f) Ongoing end-user training should be off-site scenario - for multiple people.

(g) Upper management training should be done in-office or off-site - 1 to 1.

(h) SPPD and BHP-IT's system administrators should be nominated ASAP in order to liaise both with trainer and the project team.

(i) BHP-IT initial training for areas such as facilities' management for systems, operations, help desk, security, maintenance and supports. (Source: costing system update dated 24 June 1991)

At the time, the team stacked the following **justifications** with reasons for conceptual design on the training issue of fabricating CMS using SAP technology:

(a) End-user training courses designed and developed by the Project team will be the latest and up-to-date, and will reflect how the system will look and behave in production.

(b) Greatest knowledge resides with the project team [that is, emphasis had been given on educating the fact-builders of the quasi-laboratory]

(c) Synergistic benefits will occur as the training environment will be, in fact, a test of the security measures which will be in place in the production environment.

(d) By being run "in-house" the training system will be permanently available for end-users to access after training.

(e) More cost-effective run in-house.

(f) Initial and ongoing FM [flexible maintenance] system training does not need to be considered as this training comes under the "centre of competence" agreement we have with SAP as their preferred installer.

(g) Initial FM operation training is not necessary as operations currently run for Melbourne IT. Any problems associated with IMS as opposed to CICS should be
identified and resolved during the project period. Ongoing operation will be a normal function of the operations area.

(h) Initial FM help desk training will be carried out using Melbourne IT's help desk personnel, due to the fact that when this training is required, the Melbourne group have had over 12 months live production experience to draw on. Ongoing help desk training will be a normal function of the help desk area.

(i) Initial and ongoing FM security training should not be necessary as SAP security aspects at the present time appear to be in line with current security practices. Any issues which might arise should be able to be adequately handled during the project period.

(j) Initial and ongoing DDO training should not be necessary for the same reasons as defined in I.

(k) Initial systems development and maintenance support - will be a function handled by IT members of the project team.

(l) Ongoing systems development and maintenance support - will be a function of the support group and will include - training by those IT members of the project group who stay on to support the group; training by using the courses developed during the project; and external SAP courses. (Source: Costing system update dated 24 June 1991)

These tactical deliverables of the training were discussed in closed sessions by the members who were initially enrolled in the quasi-laboratory (ie, Phoenix 21 project). It is obvious that detailing all the conceptual design issues would require more time and space, which is beyond the scope of this chapter (and even this thesis). The theoretical relevance of mentioning this is, however, to show how the costing team as "hesitant" (Preston et al, 1992) initially benchmark "the beginnings" of a major change, that is fabricating an integrated CMS at SPPD using SAP technology. However, the training in understanding the proposed systems' inscriptions (ie, understanding the SAP system) in order to translate them to users and to design and prototype the new implementation was considered vital. This is because buying "machines" or commercial software packages from an outside developer without developing necessary skills for on-going system maintenance and support in-house is something like 'the lady sawed in half, it isn't done at all'. In a similar vein, the project co-ordinator of the stand alone CMS project, Geoff Shaw, stated in a conversation that:

*Bringing in consultants may expedite a quicker implementation of a project but that knowledge may well walk out through the door when they leave the client's premises.* (GS Interview)
**Fortifying Strategic Concerns**

Initial fabrication issues in the quasi-laboratory were not only focused on identifying the weaknesses and strengths of the existing systems, defining terminologies and identifying the scope of the work, but also on "fortifying" strategic concerns of the CMS implementation.

As elaborated in chapter six, a focus of SPPD's CMS development not only comprises of the costing and financial accounting systems but also other management information systems as well. However, in order to prototype a relationship between the stand alone development of the costing system scope at that stage and the total management information system at SPPD the costing team "stacked" the following figure (see Figure 7.4).

**Figure 7.4 Relationship of the Stand alone CMS Development Scope to SPPD's total MIS** (Source: Company Data)
By demonstrating the above relationship of the CMS development scope to SPPD's total MIS at a very broad level, at the time the initial fact-builders (ie, the costing team) focused on two levels of strategic plans. One was for "world class cost management" (as they called it) and the other was for "costing system review" (which was an initial scope of the quasi-laboratory). At the time, the way in which the costing team staged and framed the concept of "world class cost management" was as follows:

World class cost management is the provision of information needed by the managers to efficiently and effectively carry out their responsibility in regard to cost management.
Cost management information needs can be classified into three categories: strategic, operational and financial. (Source: Company Data)

At the level of "world class cost management", they (the costing team) put forward the following vision and mission statements in order to fortify its strategic focus:

**Vision**

Our vision is to have a cost system that meets the needs of SPPD's management. A system that is compatible with our cost management strategies, and one that will have the widespread acceptance and support of users.

**Mission**

Our mission is to provide SPPD with systems that will provide accessible, up to date, consistent and accurate information. The systems will be flexible enough to support management information needs well into the future. These are to:

- Improve our ability to respond to changing business needs.
- Improve the quality of our business management through better information for decision making, better communication and more cost effective control.
- Gain competitive advantage by increasing the value and use of our business information resource.
- Streamline the effort to collect and process our business information.

(Source: Company Data)

The way in which the vision and mission statements of costing system review (ie, the initial scope of the quasi-laboratory) were staged and framed at the time was as follows:

**Vision**

Our vision is to have a cost system that meets the needs of SPPD's management. A system that is compatible with our cost management strategies, and one that will have the widespread acceptance and support of users.

- On-line, real time integrated costing systems aimed at providing accurate and timely costing information to aid cost management and control.
- A fully automated environment, substantially eliminating paper, eliminating duplication of tasks, and providing validation and authorisation of data input as it is progressively entered at source.
Costing systems interfaced with other SPPD systems to achieve one central database of information to meet the total cost management needs for the division.

Mission
Our mission is to develop costing systems that will add value to SPPD by supplying quality and timely costing information and services, through a technically integrated systems environment, that will aid total cost management and decision making in all areas. (Source: Company Data)

Objectives and Their Achievement Strategies
[See Table 7.3 for initial staging of the objectives of costing system development and the strategies to achieve them.]

A question that can be asked is what does such 'staging and framing' do? Is it to "own over" allies? To Latour (1987), "the text has to defend itself from malevolent readers by explaining how and to whom it should read" (Preston et al 1992, pp 574-575). Referring to Latour (1987), Preston et al (1992) further argued that "[f]raming statements provide an agenda for debate, an object for criticism, a framework for controversy, a benchmark for evaluating success or failure, a text to read between the lines of, and infer hidden meanings in, and a focus for dissent" (p575). Though it cannot be deduced as to whether the costing team, at that stage of fabricating CMS, framed their cost management development strategies with such contentions, obviously such possibilities could prevail. However, in a steelworks like BHP-SPPD, where over the years engineering allies have dominated the decision making and management control system (MCS); where there exist many contemporary concepts and philosophies such as TQC (Total Quality Control), TQM (Total Quality Management), PVC (Planned Value Control), TPM (Total Performance Management); where there exists controversies, friction and cultural barriers within various departments perhaps, at one level, it might be that selling another concept such as "world class cost management" to the non-finance allies was thought to be a difficult task. At another level, it might be just to frame what could be the scope of the costing system development at that stage.

The focus here also is not on who is enrolled, who is going out and who is not in the quasi-laboratory (cf. Latour 1987). Rather, what is of relevant and more general interest for this analysis is how the benchmarking of a major change (a new technological
possibility) has been initiated, "staged and framed", and what are the "language-in-use", "tactics" and steps being used by the initial fact-builders in fabricating the CMS at SPPD.

Table 7.3 Costing System Development Objectives and Achievement Strategies

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Strategies to achieve the objectives</th>
</tr>
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<tbody>
<tr>
<td>• To provide timely, accurate and reliable costing information for decision making</td>
<td>• Providing on-line, real time systems for data input, processing and retrieval</td>
</tr>
<tr>
<td>• To ensure user acceptance of the new systems</td>
<td>• Collecting information once only at source</td>
</tr>
<tr>
<td>• Incorporate the latest accounting trends where appropriate</td>
<td>• Providing validation and authorisation routines restricting the use of job numbers and system access to authorised users</td>
</tr>
<tr>
<td>• Have Financial Systems operating within an integrated systems environment</td>
<td>• Developing a major database that will store cost transactions at source level as they are progressively entered</td>
</tr>
<tr>
<td>• Resolve existing system deficiencies</td>
<td>• Providing on-line facilities for trace back of information detail for routine and ad hoc enquiry</td>
</tr>
<tr>
<td>• Ensure any new system is flexible enough to allow for future changes</td>
<td>• Incorporating user requirements in systems specifications</td>
</tr>
<tr>
<td>• Provide budget capabilities for departmental as well as divisional requirements</td>
<td>• Strong management support</td>
</tr>
<tr>
<td>• Accurate and reliable product costing</td>
<td>• Providing a high level of ongoing training and support</td>
</tr>
<tr>
<td>• Provide process costing functions with standard and actual cost capabilities incorporating inventory valuations and half year actual costs, and including responsibility accounting features</td>
<td>• Tailoring systems to be user friendly</td>
</tr>
<tr>
<td>• Provide job costing facilities for maintenance and jobbing operations</td>
<td>• Keeping personnel abreast of developments in accounting techniques and philosophies</td>
</tr>
<tr>
<td>• Ensure statutory requirements are satisfied</td>
<td>• Extend the application of activity based accounting principles</td>
</tr>
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<td>(Source: Company Data slightly modified)</td>
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</table>
As indicated earlier, the initiative for this change (ie, the replacement of SPPD's old CMS technology) was created through some "environmental disturbances" and an initial "jolt/kick" (Laughlin 1991) from the Finance and Planning department which is only a part of the organisation. There were allies such as Maintenance Engineering, Supply, Human Resources and other departments. Laughlin (1991, p210) argues that "there is not one end result for any disturbance but a number of possibilities" can emerge. That is, there can be many possible outcomes as a result of initiating a change. Had the initial fact-builders at that stage known what would occur at a later date as a result of their actions then the 'world' would be very nice, uncomplicated and tidy place to live in for all of us. Actors (as fact-builders) do "things" at a certain point in time because they are supposed to do those as a "consequence" of their previous collective action(s) (cf Latour 1987 - see chapter four for an elaboration). The point to make is that fabricating "science-in-action" or "science in the making" (namely, fabricating CMS at SPPD) is a collective process (cf Latour 1987, p29). Whether it's a fabrication of machine (technology) or fact (science), they are an outcome of the actions of a chain of agents each of whom translates them in accordance with their own projects (Latour 1987, Callon 1986). This is what has been happening in the quasi-laboratory (ie, the Phoenix 21 project) since its inception. That is, once the decision was taken for prototyping the potentiality of the SAP system to replace SPPD's existing cost management and other systems, various 'actors' [both the enrolled insiders (BHP-SPPD's employee) and the outsiders (SAP consultants and BHP-IT personnel) in the quasi-laboratory] have been involved in such a fabrication given their (fact-builders) assigned tasks to be performed.

So far, the above ethnography of fabricating the CMS at SPPD has addressed how the initial strategic concerns of the CMS development were staged and framed and how some aspects of the initial CD training issue were dealt with by the initial fact-builders in the quasi-laboratory. In respect to the strategic concerns as to why such an initiative was being instigated at SPPD, I posed a question to some 'key informants' who were involved in the
quasi-laboratory. My interview question was: what could be the major focuses of the strategic concerns which might instigate the fabrication of CMS at SPPD? Some "key informants" responded as follows (for more responses see Appendix 3).

Reply from Jim Hall (Chairperson of the quasi-laboratory and Manager Finance and Planning department):

First of all the initial emphasis was drawn from the need to replace an outdated costing system, which had been in place for some time about 15 years. There were lots of dissatisfactions amongst the wide range of user groups who are, if you like, to empower to manage costs and other strategic matters at lower parts within the business. Whereas the existing costing system was not terribly user friendly in that regard. That was the key thing that started the process off... If you look at our [existing] system architecture... you can see, the system architecture in place was very complicated and old... most of those systems had been developed in a time when flexibility and capability to do things and the efficiency which things can be done was quite different to what exists now. [See Appendix 3 - Jim Hall Interview dated 20 November 1992]

Reply from Karl Rommel (the 'functional owner' of the Supply department):

I think, one of the strategic focuses of Phoenix 21 is to put in a new costing and management reporting system. It did not start off to put in an Integrated Business System - that was not its' aim.

The initial concern here was focused on developing a stand alone cost system and is really what the requirement was, I believe. We did not require an Integrated Business System. It just happens that the costing people decided on the SAP product as a solution without reference to any other functions. Then, it became very clear through the functional design of implementation that we could not implement a stand alone SAP costing system. Because, SAP product is so integrated and it needs a lot of feeders from other systems and pushes data into other systems. We found that cost of interfaces to other systems was so horrific and it also means double entry of data - possible data corruption and data integrity. We just came to a conclusion that if we put SAP in, then we had to put in Supply and Maintenance as well. I very much think sometimes of 'the tail wagging the dog' - SAP is a driver, not the business requirements. [See Appendix 3 for Karl Rommel Interview - dated 5 January 1993]

Reply from John Bown (Director/manager of the quasi-laboratory - IBS project not the stand alone CMS project):

Well, the idea behind the project is to implement an Integrated Business System to the steelworks and bringing together Maintenance Management, Finance, Supply, Engineering and to an extent Human Resources as far as stage one is concerned. That's the key. We have a number of systems over a number of years all operating separately. Now we decided on SAP, which gives us an opportunity to bring them all together. We believe it will improve the running of the business and knowledge about the business, and management will better understand the
business. It will give us ultimate financial savings... It is developing along the same strategic aims - the further we get into it the more we understand what the benefits will be. [See John Bown's interview in Appendix 3 - dated 28 January 1993]

**Reply from Kerry Reid (A team leader - finance function - IBS project)**

Initially it has been instigated to replace costing and budgeting system. It has not been developed along the same lines. Now it has become an integrated business system development. Some of the areas such as Maintenance and Supply - they were not given the opportunity to evaluate the package as a normal way of going into a project. Usually you evaluate the package before you prototype. Usually the users should give consent at the beginning that 'yes' it's suit me or it can satisfy our problem and so on. SAP is not the best in all areas. But it is the best integrated system. In lots of cases it has to be a top-down decision that is forced upon people. [See Kerry Reid's interview in Appendix 3 dated 16 February 1993]

**Reply from Geoff Shaw (Project co-ordinator of the Stand alone CMS development project):**

I think the major focus initially was that we did not have a good costing system. We could not understand what's driving our cost and we could not get good cost control. In an internationally competitive environment we are trying to compare our costs per tonne of steel against our competitors cost per tonne of steel. You need to have a very good recording and measuring system to be able to compare that. Our systems lacked a lot of credibility - a very old system. The allocations of costs to products were very suspected and being able to understand cost behaviour through the system as to whether cost variable is time variable, tonnage variable or fixed, was very difficult and was very time consuming. You really need to be very specialised in cost accounting to be able to do it. Average people who are responsible for cost here found difficulty working with the cost system... Our systems were 15 years old, old technology.

We found that the cost accounting principles that we employ were quite sound. So, it was not because of the cost accounting principles so much as the credibility type issues. I used an example with you before that there were no controls over the usage of job numbers. A person could use another area's job numbers and therefore, destroy the credibility of the system. That made it very difficult in that the costing information for an area was corrupted and it would be a long process to try to check every cost.

After we developed a cost management system that was when additional issues came up that is to move for a commercial sofware of Integrated Business System rather than stand alone costing system, stand alone Maintenance system and stand alone Supply system. There were lots of individual systems having everything integrated so that you collect information once only at source, validate at source, and trace back through the computer system. So, it can become a very streamlined system. [See Appendix 3 for Geoff Shaw's interview dated 26 February 1993]
Reply from Kas Zoszak (Manager technical design/test/built):

As you aware of, the project was instigated from Finance and Planning because of the dissatisfactions with the existing DISC system. Nobody understood how the cost came about. They could not get the detailed information... it was not well understood... largely a batch system - not an on-line system. So, the project initiated from Finance and Planning - because of dissatisfaction with the timeliness of information and quality of the data. Various managers were not getting the information they really wanted. With the financial scope of work it addressed those sorts of issues... what we are doing is replacing DISC with SAP but still rely on the data being used the same as before. So where is the improvement? There is not much improvement in that regard. That's what really pushed us for an integrated approach. That is, Supply is integrated with Maintenance, Finance is integrated with others. That's where the improvement lies. Integration is a big plus. It gives us opportunities for rationalising the functional units and streamlining procedures, the processes - just to make things more efficient. (See Appendix 3 for Kas Zoszak interview dated 18 May 1993]

Although these interviews were conducted after the conceptual design stage of fabricating the stand alone CMS was carried out, they explain why such an initiative for fabricating CMS (at a later date IBS) was instigated at SPPD.

7.4.2 Prototype via Functional Design

According to Latour (1987), "stacking" involves bringing in figures, pictures and numbers to convince the reader and to enable the text (which were scientific papers to Latour) to fortify themselves (see Preston et al, 1992, p574). Although there was no stacking in terms of writing up of "scientific papers" (cf. Latour 1987) as such in the quasi-laboratory, but there was numerous paperwork which resulted in various prototype documents and design papers. Drawing figures, graphs, pictures, complex system diagrams, charts, use of system's related acronyms, symbols and specialised system languages are part of the everyday activities of the fact-builders (accountants and others) in the quasi-laboratory.

There were many system context diagrams which were prepared by the fact-builders as a part of "stacking" information in order to prototype and design the new CMS at SPPD
using SAP technology. I found Figure 7.5 (as presented below) was a good representation of the stand alone CMS development at SPPD. The inner square boxes of figure 7.5 were the representation (at that stage of the fabrication) of the systems that were considered to be designed on a stand alone basis using SAP technology (ie, by implementing some of the SAP's cost management, financial accounting and other modules). These included: RF-S general ledger system, RK-A job costing system, labour costing system, RK-A service centre costing, RK-S budgeting system, RK-D process costing system, RK-S cost centre hierarchy system, RM-Mat stocks/materials system and BARS (BHP's Accounting and Reporting Systems) interface system.

Figure 7.5 System Context Diagram of the Stand Alone CMS Fabrication Trial

Source: Company Data

5 A legible representation is attached to Appendix 1C.
The outer smaller square boxes of figure 7.5 are the representation of the major interfaces that were considered to be integrated if the stand alone CMS had to be implemented. The functional design scopes of the stand alone CMS trial at the time was in fact focused on those areas that were represented in the inner boxes of figure 7.5. All the loops with arrows are representative of the data input and output flows from feeder systems to the stand alone costing systems.

Representing the researched organisation’s (i.e., BHP-SPPD) total management information system (MIS) would certainly require a considerable amount of time and space. However, this system context diagram (i.e., figure 7.5) visualises the possible "blackboxes" (Latour 1987) that were considered necessary (at the time) to be opened up in order to enrol "actors" (both human and non-human) into the quasi-laboratory for fabricating CMS at SPPD using SAP technology.

During January through March 1992 various functional design papers were prepared on the areas as shown in the inner boxes of figure 7.5, which were known as the functional design prototypes of the stand alone CMS fabrication trial. During the period 23 March to 1 April 1992 these design papers were reviewed in closed sessions. Most of the discussions of these review sessions were centred on the convincing technical choices between the differences of the existing system and the proposed SAP system’s inscriptions and functionality, of highlighting issues encountered, of recommending solutions where appropriate and listing benefits and limitations of the proposed system implementation. The language of the discussions was specialised. The expressions such as ABAP, TK31, TB01, RK-S, RK-A are SAP system’s language. Without knowing the meaning of these symbols and acronyms it is difficult to follow up the discussions of the actors.

During 8 and 9 April 1992, these functional design papers were presented before the team leaders of various groups in the quasi-laboratory and a specialist SAP consultant (i.e., R Fiels). In each of the presentation sessions some time was allowed to raise questions and
issues. During the question time, there were heated debates between the specialist consultant and the fact-builders (ie, the presenters and the team leaders) concerning diverse matters for fabricating the CMS. It was a battle for convincing technical choices between the SAP system's functionality and the SPPD's existing DISC and other systems.

'Consultants are basically salespeople'. For example, whenever any team and/or presenters as fact-builders stumble on a new controversy dealing with the question of convincing technical choices for the proposed CMS implementation using SAP technology, the consultants always had some answers for them. Consultants, in this case, not only were the supplier of "machines" (softwares) but also agreed to provide an initial on-going system support. However, it seemed just the beginning of a long battle that had to be fought for implementing CMS (or otherwise) using SAP technology at SPPD. It is not a simple story to tell. There are lots of "bugs" in the SAP system. There are hundreds of modules, thousands of inscriptions and functions, which, it is claimed, makes the system an integrated package and the company of a leading supplier of a mainframe commercial package in the market. It is a "big bang" system (as mostly uttered by the users of the SAP system). Knowing such a system completely requires a long learning process.

On 14 April 1992, some of the functional design papers were presented before the steering committee of the quasi-laboratory. On the day, there were four presentation sessions on the following functional design papers - RK-S cost centre hierarchy, RK-S budgeting, RK-S job order costing and RF-GL general ledger. On 22 April 1992, further steering committee presentation sessions were held on the following functional design papers - RM-Materials (stock), Labour Costing, Job Numbers, Interfaces and Technical Support System.

Not only was the above steering committee represented by the executives from the Finance and Planning department but also by other allies such as Maintenance Engineering, Supply, Human Resources and BHP-Information Technology. As mentioned earlier, this steering committee has been acting as an "interessement device" (Latour 1987) - an
"obligatory passage point" through which all the higher level decisions concerning matters of the laboratory (the Phoenix 21 project) have to be passed through. It was not just a matter of "throwing words" or good presentations or stacking paperwork for "convincing technical choices" that could convince or win over the steering committee (SC) in passing the decision for the proposed CMS implementation using the SAP system. Rather, they (SC) need to be convinced that the later users are going to accept the proposed system. That it is user friendly, that it is flexible, and that it can be implemented in a cost effective manner and so on.

Latour (1987) points out that "the fate of a technology does not lie in the hands of designers or initial supporters but with those who come after-actors, who are often possessed of different interests and subject to different pressures" (Chua 1993, p22). Thus, in order to mobilise the fact-builders or to continue fabrication or to 'maintain the chain', Chua (1993, p22) argues that "new converts would need to be formed, critics silenced, competitors overcome, sceptics convinced and technology shown to 'work' in many, diverse workplaces". Clearly, at the time, the fact-builders had a realisation that the SAP system was implemented by many companies, world wide, and shown to work in diverse workplaces (see chapter five for the countries and types of differing companies that are using the SAP system). However, such implementations of CMS (or otherwise) using SAP technology would be taking place differently in terms of the company's specific circumstances, as has been the case for BHP-SPPD.

Upon completion of the first round steering committee presentations on the stand alone functional design papers, the steering committee held a closed session on 22 April 1992. It was held to decide whether or not they (SPPD) would be implementing a stand alone CMS by approving the work that was so far completed at the time. I found that the fact-builders

6 Referring to Latour (1987), Chua argues that "interessement devices are those that are interposed between the network members and all other competing entities that threaten to weaken or break linkages" (1993, p23).
again became "hesitant" about the fate of the quasi-laboratory. In particular, people lower down in the hierarchy of the quasi-laboratory had become anxious to know the outcome of the steering committee presentations' meeting. A major tension at the time among the fact-builders was the expense of developing CMS interfaces with the other stand alone system (see figure 7.5), given that they knew that the SAP system comes of an integrated package. The question was then to convince the allies and convert them to join the existing fact-builders, that is, the costing team. These others (allies to Finance and Planning) not only were sceptics, they were watchful of what had been happening within the other parts of the business. Some wanted to become part of the fact-builders from the beginning. For example, an ally from Maintenance Engineering told me the following in response to a question: "when did you (Chris Cooper) join the quasi-laboratory (ie, Phoenix 21 project)?"

*I joined this project about November 1991 when the project was only a costing system project. It was a year after the Phoenix project was initially conceived by the Finance and Planning people. We had to do a hell of a lot of very strong arguing with the accountants to let us be part of it. We had to argue that Maintenance should have some representative in the original Phoenix 21 costing project. It was only when we got a new manager of Finance and Planning (Jim Hall) we actually achieved that. (CC Interview)*

Likewise, it is possible that there might be other sceptics and allies (such as the Supply and Human Resources departments) who from a distance might have their kept eyes on what was happening at the time within other parts of the business. Despite such possibilities, the management did not force them to join the fact-builders (initially the costing team) straight way. Rather, they were asked to participate via the steering committee, that is, the 'obligatory passage point' or the 'interessement device'.

Now and then whenever there has been a structural change in the quasi-laboratory, people as fact-builders always battle to re-establish their roles - 'who is going to be doing what' and so on. On 27 April 1992, there was an announcement of a structural change in the quasi-laboratory. It was announced by the chairperson (ie, Jim Hall) of the quasi-laboratory. The new structure of the laboratory was a division into two groups - the
technical test/build and the implementation group. Although there was no formal resistance to the announcement of the structural change in the quasi-laboratory, it cannot be argued that the fact-builders were totally satisfied with the re-structuring. One would always find some battle for re-establishing roles in order to fit into the new structure. For example, some members (at a lower level in the hierarchy) felt if they could gain more operational knowledge about the SAP system then it might be possible for them to gain a higher social value, future opportunities and more money and, therefore, they wanted to join the technical/test/build group. Some framed their talk (to join with the strong associations) as follows - 'if you protect my interest I will protect yours', 'I will talk for you if you pick me up', "if I want why don't you" (Latour 1987) and so on. However, a reason for separating the project structure into two groups - technical and implementation group - was primarily to facilitate communication.

On completion of the first round steering committee presentations in April 1992, it became clear that CMS development in a mainframe environment at BHP-SPPD using the SAP system had to go through many trials. Not only did they have to convince a large number of allies and users of the system, which was estimated at around three thousand, but also make convincing technical choices such as integrating various stand alone feeder systems.

During the period May through June 1992 I attended various meetings (see Appendix 4 for diaries) which were held to prototype further "work-breakdown" structure (as they called it). Some of these meetings were aimed at reviewing the individual progress of fact-builders. The following conversations were from one of such meetings that I attended on 3 June 1992. It was a meeting of the technical/test/build team.

A team meeting: 3 June 1992 held at 10.00 am
The meeting was chaired by Kas Zozsak (project manager - development team). The participants of the meeting were: B Wong (BW) (replacing P Mckellar), P Newing (PN), H Fernandez (HF), V Laina (VL), G Armstrong (GA), G Clancy (GC), P Hawkins (PH), D Rouse (DR), K Reid (KR), M Rodrigue (MR), A Shain (AS) and J Anus (JA).
After an apology for conference room availability, Kas Zozsak (KZ) asked each individual member to report their on-going work progress and the immediate work plan.
Conversations:
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Initiated by JA:  "I have been investigating product groupings in various mills - individual product requirement, BOS and Strip mill is progressing in this regards though caster has some problems."

Responded KZ  "Keep your eyes on these issues."

JA responded  "Enormous amounts of work need to be done."

"Make sure - its comprehensive", said KZ.

"What we need is a composition of product groupings. It is accounting plus technical type issue", said JA.

GA responded  -  "I have been doing a review of business events... more details on by-product & looking at some further direction".

GC responded  "I have been looking at the strategic issues on the area of job numbers, and cost centres in the supply areas. I am also looking at work breakdown structure of the interface team... I had a meeting with some people in the contract area... next week I will finalise the work breakdown scope on the interface area."

HF responded  "I have been looking at the work breakdown structure on issues such as chart of accounts' structure & its philosophy, reconciliation issues between the RF general ledger and process costing - ledger balancing, mapping cost centre reporting issues, finalising our own chart of accounts."

In between KR (manager accounting integration) interrupted with an argument: "For us volume is huge and therefore, we need to give some extra care". "Documents numbering is also a critical issue", said Ms Reid.

PH responded  "I am trying to breakdown the resource structure... looking at skeleton feeder systems... 'have done first version of draft... 'have scheduled a meeting with the design team."

In between KZ interrupted with an argument that "design team will be very busy during the next three weeks or so".

VL responded  "Last week I was looking at the requirement of cost elements. I looked at the Maintenance area for updating cost elements and budgeting purposes. The problem is... a wide range of user understanding regarding cost elements is necessary. I have also been looking at the provision of labour costing, that is - when labour costs will settle to order. Next week I will spend some time with R Fiels (a specialist SAP's consultant)."

BW responded  "I was trying to understand the requirement of PME [Plant Maintenance Engineers] cost centres and how to prepare budgets, etc."

PN responded  "I spent lot of time with Peter Mckellar and Bill Martinoski. Also worked on work breakdown structure, refined some business processes... will be doing HR review... hoping to make some diagram to show the relations of our business events."

In between Kas Zoszak provided an argument that "we should give more care on labour costing. We need to reconsider our extant labour costing system because it is a good one too".

KR responded  "I have been maintaining liaison with SAP consultants and also with the project sponsor, Jim Hall. I have had a couple of meetings regarding our supply and contract systems... Following up various issues, getting ourselves ready to fight with SAP consultant". (Laughter!)

DR responded  "I am involved with work breakdown structure... looking at the methodology of detailed system design. I talked to a few people from New Castle R&BD... looked at estimation technique, HR review... will be doing more work on the methodology of detail system design."

AS responded  "I completed HR review... Have done a draft copy on work breakdown structure... prototyping different labour costing alternatives."

KZ responded  "We will submit an informal presentation including costs estimation to the group general manager. It is hard to tell whether we are going for SAP... Costs may surprise us especially if we consider the interfaces... Reality is... costs of interfaces is about $2 million dollars -it is very high. At this cost, is it really worth while? What would be the cost/benefit of going SAP? At this stage,
stopping the project is politically unacceptable! The issue is very complex. We have communication gaps with top management. On the other hand, we have not yet seen the total scope and, therefore, it is difficult to have cost estimate with 100% accuracy. Some are optimistic, some are pessimistic. Commitment from various departments to go for SAP is an issue. Who should sign it off... what about the documentation and refinement of business events... documenting the sequence of events and scheduling, that is - work breakdown structures. We should look forward to the flexibility issues. [Also emphasises] the visit of R Fiels from SAP"

Similarly others also mentioned what they had been doing during the previous week or so and what they would be doing in the following weeks. The meeting was called off at 11-15 am.

At the time, the members of the quasi-laboratory were busy stacking information, prioritising SAP's inscriptions for various business processes and selecting the modules in order to prototype and design the new CMS. As they opened up more and more areas (or blackboxes) and looked at the required interfaces that were necessary if the stand alone CMS had to be implemented, they found such an implementation was going to be a daunting task, especially considering the cost and time required for customising interfaces between cost management and other systems.

For example, the manager of the test/build team, Kas Zoszak, asserted in a meeting on 4 June 1992 (which was after more than a year of prototypes of the SAP system) that:

... Don't over design the systems. That's what SAP people keep telling us. There is lots of functionality we don't even know... We are not intending to build anything special at this stage in addition to the standard functionality of SAP system. Of course, we will have limited function, limited drill down facility... we are trying to minimise costs.

These utterances by the development manager were basically a reflection of what might have been informed by the "interessement device" (the steering committee and the management). That is, the fate of the stand alone CMS development had become doubtful as it progressed with the expense of developing (customising) interfaces with other stand alone systems which were found to be more expensive than the cost of introducing more SAP modules in order to have integration in those areas.
7.5 Fate of the Stand Alone CMS Development Trial What's Gone Wrong?

On Monday 22 June 1992 in a management meeting a change in direction of the quasi-laboratory was endorsed, which determined the fate of the stand alone CMS development trial at SPPD. The content of change, as stated in an update of the Phoenix 21 project was as follows:

- **Stop the Phoenix 21 project in its present scope of introducing a stand alone Cost Management System in June 1993 based on SAP release 4.4c**
- **Recommence the Phoenix 21 project as an Integrated Business System to incorporate modules in SAP release 5.0 in:**
  - Cost Management - expanded to include: general ledger, cost centre accounting, work order costing, accounts payable and possibly projects and asset;
  - Supply and Maintenance Management - Including management and Costing.
- **Introduce Phoenix 21 Integrated Business System to SPPD in June 1994.**

(Change Management Update Phoenix 21 Project)

Nothing had gone wrong concerning the stand alone CMS development, rather it was getting stronger day by day as more enrolments of actors (both human and non-human) occurred. Also, the initial instigators, the costing team, were not to blame for such happenings. Most of the people who I interviewed or talked to supported the opinion that the work done during the stand alone CMS development was not wasted. Rather, it provided them (the fact-builders) a benchmark to further the scope of the quasi-laboratory.

I asked a question: "In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?" In the following some of the responses are presented.

*Ian McCulloch responded:*

> The work that has been carried out under the previous project structure (ie, the stand alone CMS development structure) got two benefits. First, lots of work that has been done in the costing area only needs a minor modification and, therefore, we could say it is good foundation. Secondly, it allowed us to explore most of the business processes in the costing area.

*David Kirton responded:*

> It is a continual learning process. I don't think it was a waste of time. You got to build things slowly. For instance, in many ways in RK-S costing area we don't need to change much, rather, what we will be looking at... is whether any change is required for improvement.

*Henry Fernandaz responded:*
It had to be evolved. For me, it's a foundation, from where we came from... Further requirements such as chart of accounts' structures would not change much, for example, for accounts payable we have to start from scratch.

Geoff Armstrong responded:

Previously, the scope of the project was not specifically defined enough. The goal of the project was a bit confused. Now, our objectives and goals are much clearer. Mr John Bown (project manager) and Mr Jim Hall (project chairperson) have been focusing on that. With the earlier project the missing part is IBS (Integrated Business System). All resources are now directed towards achieving the goals of IBS.

Bill Martinoski responded:

Those work basically provided us benchmarking and a lots of training in some respect... They provided us a methodology in carrying out further implementation of the project. They also showed us the deficiency... somehow led the direction for further improvement.

Scott Reed-Stephenson responded:

In lots of cases, people continued from those works. I don't think it will be a "stop and change" situation.

David Prior responded:

In my opinion it has not been a total waste of time.

David Rouse responded:

In a word, I would say it was "disorganised" and "unstructured", seemed to be approached in the wrong manner. Very little time was given for requirement definitions. It did not provide any good direction because it was not carried out properly. It ended up not designing the ideal type CMS, simply duplications of existing systems. For functional design stage the number was derived at a detail level straight away without a proper decomposition at a lower level.

John Bown responded:

It basically emphasised only financials. However, they have done some good work. We are revisiting them. Also, we are looking at the applicability of those under version 5.0.

Amenda Shain responded:

It's benefited us. It's a learning process. It led us to change the direction of the project. It familiarises SAP system. It allows us to review the potentiality of SAP system. It shows us what to customise and what to change, though lots of re-work would be needed. We now included more modules. It really can be considered as benchmarking.

Vince Liana responded:

It enhanced our understanding of what we do today and what we will be doing tomorrow. We looked at what could be an ideal situation. We looked at SAP and its functionality including ABAP/4 for interfaces. We also tried to work out the cost impacts. The works definitely made users consciousness of the Phoenix 21 project. In other words, it opens up users minds. In many areas we will not do any extra work.

Rodney Winbank responded:

From my point of view, those works saved us a huge amount of time and problems. We really went a fair way down the track - got experience to work on. It gave us a benchmark. You see, the very first project you put in is always like this.

Jim Hall responded:

Eventually, most of those works will be retained. The main change has been that lots of interface issues have disappeared. Because of that, where we were building interfaces to
existing systems - there are now integration issues that have to be understood and allowed for. So most of that original effort is now just being enhanced or being altered to allow for the fact that the system will be integrated as opposed to building interfaces.

As mentioned earlier, according to Latour (1987), the fate of a technology does not lie in the hands of designers or initial supporters but with those who become the after-actors, who are often possessed of different interests and subject to different pressures. Similarly, the fate of the stand alone CMS development trial also becomes subject to change as more allies (such as Maintenance Engineering, Supply and others) become part of the fact-builders who certainly possess different viewpoints, management styles and requirements. Moreover, in SPPD, there exist controversies, friction and cultural barriers amongst various departments, teams and groups, which was sometimes labelled as a "them and us" conflict. Reference to 'them' or 'us' is made depending on the area a person belongs to. Over the years the expression 'them and us' has been used to refer to the conflicts between engineers and non-engineers. Now-a-days, it has been extended to various stand alone entities such as Engineering vs Accounting, Accounting vs Information Technology (IT), Supply vs Engineering, Engineering vs IT.

On 23 June 1992 there was a meeting to which all the members of the quasi-laboratory were called on to attend. I also attended that meeting. The project co-ordinator (at the time) of the implementation team, Geoff Shaw, provided an introductory speech indicating what had happened at the previous management meeting held on 22 June 1992. That was followed by a speech by Kas Zoszak (the manager of the test/build team, at the time) who highlighted some of the tentative future directions of the quasi-laboratory. He mentioned that "we are looking forward to the status of SPPD's costing system to adapt the best practices in the world". He also confirmed the recommendations that were made by the steering committee on 22 June 1992, such as - "adopt an integrated business system.

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7 In responding to one of my questions: "what is a cultural issue", a team member (Dave Rouse) contended that, to him, this "them and us" or "intra-group" conflict is a cultural issue.
approach", "install the latest version of SAP (release 5.0C)", "implement by June 1994". He also announced a change in the scope of the quasi-laboratory.

The changes were:

<table>
<thead>
<tr>
<th>Current (at the time)</th>
<th>New (at the time)</th>
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<tbody>
<tr>
<td>Process Costing</td>
<td>Supply</td>
</tr>
<tr>
<td>Job Costing</td>
<td>Maintenance Management</td>
</tr>
<tr>
<td>General Ledger</td>
<td>Accounts Payable</td>
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<tr>
<td>Materials Management</td>
<td>Projects management</td>
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<td></td>
<td>Assets management</td>
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<td></td>
<td>Others (EWAS, Mobile and controls)</td>
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There were various issues raised in that meeting. What should be the management of overall SAP implementation? What would be the long term strategy for such an implementation? It seemed again a stop/start syndrome. They were learning by making mistakes as well as knowing the impact of others.

To mobilise the fact-building process Kas Zoszak also put forward some words of encouragement to the members as follows:

> Look, so far what has been done is not wasted. We are looking forward to one overall design. Our major concern is change management... need a lot of work to be done on the change management... We are looking forward to the next two years from now. We need to re-visit the change management plan. Two years is not a long time for a project like this. From SPPD’s point of view... going for a commercial package from a third party... what happens if something goes wrong! (See Appendix 2 diary of 23 June 1992: Tuesday)

More queries, interventions and questions were raised: what should the members of the quasi-laboratory do then? How long will it take for them to re-organise again? In response to such questions the project manager test/build team, Kas Zoszak, said the following:

> ... Think individually... a new project plan will be prepared shortly... Re-structuring and 're-scoping' the work might take at least three months. Well, it will be a slightly different approach.

7.6 Conclusions

The ethnography of the chapter has displayed some of the stories and rhetoric of fabricating the stand alone cost management system at BHP-SPPD using the SAP system.
In the earlier section, as was intended in the introduction, various processes and events of such fabrications prior to and including the formation of the quasi-laboratory have been examined. An important focus of this section is the findings that were extracted from the visit to the world-class companies in the UK and USA. From those findings an argument is made that today's cost management practice has not only been focusing on the 'constitutive roles' of managing cost management and other business activities of an organisation, but also on the technological incapacity to achieving its effectiveness. The section also addressed how the 'commercial-in-confidence' (a team of the researched organisation) evaluated the SAP system when replacing the existing data processing technology. How the task of tendering and evaluating such technology to begin the long battle was also documented in this section.

The second section of the chapter addressed some of the multiple happenings of fabricating the stand alone cost management using the SAP system. There were various phases of such fabrications. Not only was fabrication begun in the conversations of individuals, in working parties, in meetings restricted to small groups, in consultations with various professional consultancies and the supplier of the software (the SAP AG Ltd); but also initiated by several phases (as they call it) such as 'conceptual design phase', functional design phase* and detailed design. This section not only addresses these phases but also advances the rhetoric of fortifying, staging and framing the strategic concerns of such fabrications. The ethnography of this section is not only based on observation and documentation, the fact-builders' opinions have also been incorporated to validate (or authenticate) why the stand alone cost management project did not succeed. A finding is that nothing had gone wrong with the stand alone cost management development at SPPD, rather, it was getting stronger day by day as more enrolments of actors (both human and non-human) took place in the quasi-laboratory. A new beginning was called for to develop Integrated Business System (IBS) rather than a stand alone cost management system. The following chapter presents such an ethnography.
Chapter Eight


8.1 Introduction

On 5 August 1992 I met the ex-project coordinator (GS) of the quasi-laboratory at 11am. The intention of meeting the ex-coordinator was to enquire as to why he had left the Phoenix 21 project (the quasi-laboratory) at that stage. He was one of the initial key fabricators involved in the development of the cost management systems (CMS) in the researched organisation (BHP-SPPD). I asked him what the project's situation was at the time. A part of his response is as follows (I recall my notes).

"We are now re-organising the project. Management is looking to include [enrol] more areas [in the project] such as Supply and Maintenance engineering. The cost management system development is viewed as a stand alone system. Management is looking for an independent person who can look after the integrated project.

There are conflicts of interest between various functional owners. We have to have a right project structure. We may appoint consultants. We are now looking at SAP's version 5.0c instead of version 4.4c which we have now. We need to understand business processes and events. We need to show them in flow charts. We need to train people. SAP is a tool only. People must understand the business processes. We may revisit the design. Costing system may not require much change. We have to look at the integration issues carefully. From the strategic point of view, the twelve months delay of the project implementation would provide extra time to revisit other areas such as Supply, Maintenance, all financial and costing, capital costing, service shop and human resources.

We need balance time, costs and resources. Bringing in consultants may expedite the project implementation but that knowledge may walk out through the door when they leave the client's premises. Management wants to get things done quickly. We have to compromise quality as well. Getting management's decisions is difficult. If management would have decided earlier, we then could have gone a bit further down the track. Timing is an important issue - climate is not right. We need to give more attention to the cultural issues and changing the management philosophy.

We have to have a good management philosophy. Now, a cost management system is in place. Previously cost management was neglected. During the second half of the 1980s SPPD had done well. We have to make sure we survive in the world market. To me, short term is now, and long-term is a year from now. We have to improve processes which lead to productivity improvement. We need to focus on international competitiveness, business improvement, TQC. We have to assist the 'Off-The-shelf' system. Application and training within cross functional areas is important. In a large organisation like ours communication is a problem. We need good people. Change management is an important issue. Understanding business processes is a vital task. I am formally off the Phoenix 21 project. I have been assigned another job - that is, productivity and process improvement of the Tin Mill area. (See Appendix 4 for diary of 5 August 1992)"

1 Although I met the ex-project coordinator on 5 August 1992, a date two months after the restructuring of the quasi-laboratory, my involvement in the project at the time was continuous and thorough.
We have seen in the previous chapter that the implementation of the stand-alone cost management system (CMS) did not succeed as planned. There were many considerations for stopping the stand-alone CMS project and its subsequent re-organisation. The "interessement device" (or the steering committee) could not work out with any precision what the cost of 'interfaces' would be if they were to develop and customise them in-house (of course, with the help of the regional branch of BHP-IT at Wollongong). Not only did the costs rule out taking such a decision, but the time and effort required to develop valid integrations within all the required feeder systems as well as managing change were also major considerations. Rather, buying standard modules from SAP AG Ltd (the supplier of commercial softwares) which integrated with various feeder systems was seen as a preferred option. With such a shift of focus more enrolments of "actors" was taking place in the quasi-laboratory. These enrolments included Supply, Maintenance Management, Engineering and Human Resources departments.

With such an increasing enrolment in the quasi-laboratory, the focus of the project was redirected from the development of a stand-alone CMS to an Integrated Business System (IBS). Although it was a new beginning, at the time, 'things' (machines and inscriptions) seemed to be more familiar or visible as compared to the original situation, at least to the Finance and Planning team (the initial fabricators), when they for the first time evaluated some of the SAP's modules (namely, RF General Ledger, RK cost accounting, RK-A order accounting, RM materials and other technical support modules).

Latour (1987) argues that "there is no way of tying together interested groups (people) unless 'things' are tied with them". To Latour (1987), 'things' can be represented by such aspects as "machinations" and "inscriptions". In this sense, we can argue that an organisational internal control system is no more than tying together people (employees) within and across various functional areas with "things" (namely, operations, machines, and inscriptions). Not only can such tying be referred to as the interaction between 'machines' and 'people' but also as interactions of 'people with people' or 'things with things' or
machines with machines'. Depending on the size and the environment in which the organisation operates such tying can vary from a simple to a very complex interaction (cf. Porter 1985). At a very general and simple level such a model can be presented as follows.

Following this simple analogy, an interesting question regarding this ethnography is how had the change management of the quasi-laboratory (Phoenix 21 project) attempted to tie up "things" (namely, the SAP system's modules and inscriptions) to the interested groups? The interested groups at SPPD include Accounting and Finance, Supply, Maintenance, Engineering, Human Resources and Production departments.

Overall, the chapter will address a range of questions and multiple happenings concerning fabricating SPPD's IBS development using the SAP system. For example, why had the emphasis been shifted to develop an IBS rather than a stand alone CMS? How did the fact-building tasks including accounting persuade? What were the struggles involved in such a fabrication? Why had such fact-building processes taken a long time? What are the consequences of such fabrication? What impacts has such fabrication on the future roles of (management) accountants (or otherwise) within the researched organisation? What possible communicative (behavioural) implications do the various occupational groups (the users of the integrated system) have in sharing and managing information under the proposed system at the researched organisation? What constraints did the fact-builders face to build, implement and deploy the technology (the SAP system)? How did SPPD reshape
customise) the technology? How can the technology (the proposed integrated CMS) shape and influence the "lifeworld" at SPPD?²

The organisation of this chapter is as follows. The first section will address some of the "machinations" and "inscriptions" of fabricating the Integrated Business System development with special reference to the cost management system. The second section will address some 'convincing arguments' regarding the change management and behavioural issues of such implementation.

8.2 MACHINATIONS & INSCRIPTIONS

Latour argues that "(b)efore a machine is built many debates take place to determine its shape, functions and costs" (1987, 28). Is it any different in the case of SPPD's cost management and other systems' implementation using the SAP system? Some of these debates have been presented in the earlier chapters (see chapter six and seven). Some more are addressed here.

There are numerous "machinations" and "inscriptions" involved with installing and/or developing information technologies. The SAP system is no exception. During the last two decades or so, SAP AG Ltd (the supplier of the software) has been involved in developing a wide range of data processing modules for differing business applications (see chapter five). At this stage, most of the modules of the SAP system are considered as standard integrated packages. A question can then be raised as to why it is necessary to fabricate the SAP system again at SPPD?

Latour argues that "the fate of facts and machines is in later users' hands; their qualities are thus a consequence, not a cause, of a collective action" (1987, 259). In this sense, the machine (the SAP system) has been developed originally in Germany, the users of the

² It may not be possible to provide a complete set of answers for all these questions in this chapter. However, posing them would certainly give rise to some of the possible consequences of such implementation.
system at SPPD have to understand, learn and redesign the system for their own use. If the
users can't use it the question of fabricating such a system won't arise. To SPPD, it is a new
implementation, they did not use the system before. Success of such fabrication is not like
buying a car then driving it (of course, by a licensed driver), its qualities are dependent on
the successful handlings of change management issues. For example, users have got to be
trained. There is a need for tying up 'machines' and 'people' together in order for the
effective implementation of CMS. There are many cross-functional (interdisciplinary)
aspects involving various occupational groups such as accounting and finance, supply,
engineering, maintenance management, production, information technology and human
resources management. Representation of all the "machinations" and "inscriptions" of such
an implementation is not an easy task. Neither is such agency is not assumed nor is it
considered possible here to present the details of all these areas. The ethnography of this
section, however, is aimed at presenting some chronological events and multiple happenings
(including the specifications of some of the machinations and inscriptions required in
fabricating the integrated cost management system using the SAP system) since the
reorganisation of the quasi-laboratory in July 1992. That is, at the time when the
development of an Integrated Business System (IBS) was endorsed.

8.2.1. Another Beginning - New Structure, Plan and Scope of the Quasi-Laboratory

It was another beginning for the fact-builders of the quasi-laboratory. That is, a new
revised implementation date of 1 July 1994 was endorsed to develop an Integrated Business
System (IBS) by stopping the stand alone CMS development project (which was previously
scheduled to be implemented by 1 July 1993). As mentioned earlier, not only were the
considerations of costs and efforts that may require customising interfaces were 'ruled out'
stopping the stand alone CMS development using the SAP system, but also there were
many other issues which forced the steering committee into taking such a decision.
Interestingly enough, whenever the "interessement device" (or the steering committee) had
tried to quantify any benefit concerning the IBS development (at least, at the early stage of
its development), there were no immediate answers or clear statements. Factors such as complexity and invisibility were to blame. Since, at the time, most of the controversies were focused on the issues of integration within various feeder systems (or sub-systems), therefore an emphasis was given on forming cross-functional teams to carry out the proposed fabrication at SPPD. Following such a decision, six functional teams were formed. The teams included Finance, Supply, Maintenance Management, Engineering, Human Resources and Technical Support teams. Except for the Technical Support team some members in each team were assigned cross-functional responsibilities. Each functional team was headed by a team leader and a functional owner. At one level upward in the project hierarchy, there were two managers - project manager development and the implementation manager. These two managers were headed by a project director who then reported to the project chairperson and the steering committee (see figure 8.2). There were five functional owners from five departments. These functional owners coordinated with the team leaders and the managers.

With the increasing enrolment of allies into the quasi-laboratory, it was expected that there would be some fierce controversies and "political struggles" or conflicts amongst various occupational groups such as accountants, engineers and IT specialists. With this in mind, a neutral person was appointed as a project director. The new director was neither an accountant or an engineer, or even an IT specialist. Rather, his educational background was in journalism, and he had worked with the health and safety department of the researched organisation for some time. A reason for such an appointment might be to 'keeping the interested groups in line' (Latour 1987), especially for keeping the long standing conflicts (or cultural barriers) amongst various occupational groups within the researched organisation to a minimum.

Latour argues that:

Two things are needed in order to build a black box: first it is necessary to enrol others so that they believe it, buy it and disseminate it across time and space; second,
it is necessary to control them so that what they borrow and spread remains more or less the same. If people are not interested, or if they do something entirely different with the claim, the spread of a fact or of a machine in time and space does not take place. A few people toy with an idea for a few days, but it soon disappears, to be replaced by another. Projects which trigger enthusiasm are quickly put back into a drawer. (1987, p121)

Similarly, when the quasi-laboratory moved out from the premises of BHP-IT (Wollongong region) to SPPD's own premises in December 1992, one would almost certainly assume that the steering committee (the "interessement device") and the senior project members might
have convinced all the parties including the sceptics and detractors of the implementation of SAP system for their cost management and other systems, and that it was 'getting stronger'. Otherwise, the project would have been discontinued.

The organisation of the quasi-laboratory was in fact structured on the basis of the agreed scope of the IBS project. An outline of the new scope of the IBS project is represented below (see figure 8.3)

**Figure 8.3 An Initial Scope of the Development of IBS at SPPD**

| RF-GL, RK-S, RA & RK-E Systems | RM-Mat Systems
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost Management &amp; Finance</td>
<td>Supply Management</td>
</tr>
<tr>
<td>Accounts Payable . Order Accounting</td>
<td>. Requisitioning</td>
</tr>
<tr>
<td>Payroll and Labour Accounting</td>
<td>. Purchasing</td>
</tr>
<tr>
<td>Assets &amp; Capital Accounting</td>
<td>. Inventory Control</td>
</tr>
<tr>
<td>Responsibility Accounting</td>
<td>. Warehouse and Stock Management</td>
</tr>
<tr>
<td>Process Costing . Forecasting</td>
<td>. Management Reporting</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RK-P &amp; RM-N Systems</th>
<th>Integrated Business Systems (IBS) at SPPD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Works Administration</td>
<td></td>
</tr>
<tr>
<td>. Work Registration</td>
<td></td>
</tr>
<tr>
<td>. Performance Monitoring &amp; Reporting</td>
<td></td>
</tr>
<tr>
<td>. Project Reporting</td>
<td></td>
</tr>
<tr>
<td>. Assets Accounting</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RM-Inst Systems</th>
<th>Plant Maintenance Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>. Maintenance Costing &amp; Budgeting</td>
<td></td>
</tr>
<tr>
<td>. Maintenance Equipment &amp; Location</td>
<td></td>
</tr>
<tr>
<td>. Work Plan</td>
<td></td>
</tr>
<tr>
<td>. Work Scheduling</td>
<td></td>
</tr>
<tr>
<td>. Perform Maintenance Work</td>
<td></td>
</tr>
<tr>
<td>. Performance Monitoring &amp; Reporting</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RM-QSS Systems</th>
<th>Quality Assurance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Management</td>
<td></td>
</tr>
<tr>
<td>. Cataloguing</td>
<td></td>
</tr>
<tr>
<td>. Requisitioning</td>
<td></td>
</tr>
<tr>
<td>. Purchasing</td>
<td></td>
</tr>
<tr>
<td>. Inventory Control</td>
<td></td>
</tr>
<tr>
<td>. Warehouse and Stock Management</td>
<td></td>
</tr>
<tr>
<td>. Management Reporting</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RM-PPS Systems</th>
<th>Production Planning &amp; Control*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Resource Management</td>
<td></td>
</tr>
<tr>
<td>. Employee Records</td>
<td></td>
</tr>
<tr>
<td>. Training Administration</td>
<td></td>
</tr>
<tr>
<td>. Occupational Health &amp; Safety management</td>
<td></td>
</tr>
<tr>
<td>. Selection and Remuneration</td>
<td></td>
</tr>
</tbody>
</table>

In addition to the initial scope of fabricating the IBS as shown in Figure 8.3, a technical support group was also created outside the cross-functional teams (see figure 8.2) in the quasi-laboratory. The interested members of this group were from BHP-IT, which has been providing services for computing and information technology to the researched organisation.
(see chapter 5). Not only was the technical support group interested in providing technical services for setting up the initial systems for designs and prototypes of the SAP modules, but they were also involved in developing such strategies as system operating procedures, quality assurance of the system, system administration, programming effort, security, service level agreements, performance measurement, project management and production system. These strategies had been further sub-divided into major tasks to be accomplished. For example, 'change control procedures', 'programming standards', 'walkthrough procedures', 'estimation matrix' and documentations are examples of some of the sub-divided tasks of the "quality assurance" strategy for the technical support group. The "programming effort" strategy is sub-divided into such tasks as interfaces, conversion and implementation, problem support and resolution, system testing, system modifications and special system information.

After the move of the quasi-laboratory to the researched organisation's own premises in December 1992, a project plan (see figure 8.3) was put up on the wall of the laboratory. Targets were also set to accomplish the scheduled plans. Besides the project plan and set targets, there were three key principles to be followed in fabricating the proposed IBS implementation which were also put up on the notice board. These are: make minimal changes to standard SAP system, focus on 'core' functionality only and maintain business-wide perspective.

As well, there were many "project milestones" and there were many clashes of priorities between various functional areas. Newly enrolled allies such as Maintenance, Supply and Human Resources were asked to expedite and catch up with the existing finance and planning work. As usual, new entrants into the quasi-laboratory seemed as if they were "weak hesitant" (Latour 1987, see Preston et al, 1992) and were sceptical about many happenings in the quasi-laboratory. There were heated controversies, differing opinions, interests and persuasions.
At SPPD, it was the first time that various occupational groups broke through a very strong cultural barrier to a situation whereby they would be sharing each other's requirements and needs. To them, it had been a long standing cultural battle. At a general level, there exists at least three sub-cultures which might give rise to the 'them and us' type of cultural barrier in the quasi-laboratory. These are accounting and finance, engineering and information technology cultures. Each of these groups has their own unique style of management, people and "things" to manage and "tie up together".
A team leader (KR) of the accounting and finance function in the quasi-laboratory once said to a local news agency that "no longer will it seem a one-way exercise" (Kembla News 1993). "For those at SPPD who have been used only to supplying information to the accounts and finance people, the introduction of the SAP system will offer a real return service to help them better manage and understand the business", said the team leader. The team leader further urged that

The new Integrated Business System [IBS] to be offered with the completion of the Phoenix 21 Project will remove from Finance and Accounting the current emphasis on correcting and chasing up queries, to providing management with information [that should be] valid [emphasis added] in the first place... we will be offering more than just a finance and costing system; it will be a range of broad information that must help our business. [Kembla News, 1993, p11]

Gaining of the signature from the group general manager (GP), who is the highest level of authority in any matter of the quasi-laboratory, is an important consideration to the fact-builders. Once such commitment was obtained, the news spread within the SPPD and to the interested parties. For example, in a change management update the following news was made available to the fact-builders and others:

The good news is that the GGM [Group General manager], Grahame Parker, has signed the approval for stage one of the new direction for Phoenix 21. This means approval for expenditure to complete activity including functional design by May 1993. It will also allow for consultancy assistance once the requirement definitions are completed late next month [ie, October 1992]. (BHP-SPPD Change management Update 10 Sept 1992)

Although the signature of the group general manager was obtained in September 1992, the "fact-building" process of the development of cost management and other systems did not stop. Rather, it was a continuation of the work that had been carried out by the teams of the stand alone CMS project since July 1992, the time when the redirection of the Phoenix 21 took place in order to develop an Integrated Business System (IBS).

8.2.2 Requirement Definitions (RD) Phase

The new project was initiated with the "Requirement Definitions" (RD) phase. The major objectives set out for this phase were as follows:
• To uncover all potential opportunities for improvement.
• To ensure that no current requirements are overlooked in the system.
• To identify what the Phoenix 21 system should do, expressed in users' terms: What information the proposed system should present to the users; what input data must be captured to produce the required outputs; what business controls are necessary to regulate the proposed system.
• To identify all relevant business processes. (Company Data)

On 27 August 1992 in a meeting of the project co-ordinators an overview of the method of developing the documentation of RD papers was explained. The following sequence of activities was recommended to be followed up to prototype overview in this phase: (i) initiate the phase, (ii) define scope and objectives of various functional areas, (iii) review scope and objectives, (iv) analyse current system, (v) draw current system context diagram, (vi) identify and decompose business processes, (vii) review business processes, (viii) draw business process charts, (ix) describe business processes, (x) summarise proposed interfaces and (xi) review "requirement definitions" (RD) reports and sign-off.

In addition to these sequential steps, there were many dimensional enquiries to establish the "requirement definitions" for the various "decomposed business processes". Examples of such enquiries are:

• What is (are) the basic aim(s) of the process?
• What is the priority of the process? Breakdown the process with further specifications by ranking 'must, highly desirable, wants and not required'.
• Who is responsible for decomposed business processes?
• What is the source of input?
• What are the requirements for interfaces?
• Identify the degree of process frequency.
• Prepare system's context diagram for information process flow.
• Indicate the output of the process.
• How should the security and control task be handled?
• Provide benefits and improvements of the process with the indication of short run and long run possibilities.

During October 1992, various RD papers were made available to the interessement device (the steering committee) and the "functional owners" of differing departments within the SPPD and BHP-IT. These papers were prepared in the areas of cost centre accounting (RK-S, RK-D), general ledger (RF-S), job costing (RK-A), labour costing, plant maintenance (RM-INST), supply and services (RM-MAT), engineering (RK-P, RM-N),
assets accounting (RA), human resource management (RP), accounts payable, BARS (BHP's Accounting and Reporting Systems) and operating result analysis (RK-E). Contents of these papers included the scope and objectives, the existing system assessments and context diagrams, the proposed system context diagrams and high level business processes required for respective functional areas. In a way, the fact-builders of the quasi-laboratory had in fact begun their new journey of fabricating the IBS through initiating this RD phase. Not only were they involved in identifying the weaknesses and strengths of the existing systems and procedures and the scope of work as well as defining the terminologies through the RD phase, but also it was an attempt by them to bring the entire organisation's business processes for information processing to a 'centre of calculation' (Latour 1987).

Take, for example, the RD paper on job costing. The following high level (draft) contents were included in it.

**Exhibit 8.1 Contents of RD Job Costing (draft) paper**

| 1 Functional Area Scope and Objectives | 3.2.2.4 Amend Special Sales Tax Order |
| 2 Systems | 3.2.2.5 Amend Leased Vehicle order |
| 2.1 Current Systems' Assessment | 3.2.3 Charge Costs to Orders |
| 2.2 Current Systems' Diagrams | 3.2.3.1 Charge Costs to R&D Order |
| 2.3 Proposed System Context Diagrams | 3.2.3.2 Charge costs to Leased Veh. order |
| 3. Business Processes | 3.2.3.3 Charge costs to External Inv. order |
| 3.1 List Decomposed Business Processes | 3.2.3.4 Charge costs to Centralised job order |
| 3.2 Business Process Charts & Descriptions | 3.2.3.5 Charge costs to Sales Tax order |
| 3.2.1 Create Order | 3.2.4 Settle an Order |
| 3.2.1.1 Create R & D order | 3.2.4.1 Settle R & D Order |
| 3.2.1.2 Create Ext. Invoicing Order | 3.2.4.2 Settle Leased Vehicle Order |
| 3.2.1.3 Create Centralised Job Order | 3.2.4.3 Settle External Invoicing Order |
| 3.2.1.4 Create Spec. Sales Tax Order | 3.2.4.4 Settle Centralised Job Costing Order |
| 3.2.1.5 Create Leased Vehicle Order | 3.2.4.5 Settle Special Sales Tax Order |
| 3.2.2 Amend an Order | 3.2.5 Record Work-in-progress |
| 3.2.2.1 Amend R&D Order | 3.2.6 Create Master Data |
| 3.2.2.2 Amend External Inv. Order | 3.2.7 Reporting Order Costs |
| 3.2.2.3 Amend Centralised Job Order | 3.3 Opportunities for Improvement |

(Source: BHP-SPPD data)

Similarly, in the following, examples of a few RD papers are provided. For example, the RD paper for cost centre accounting (CCA) contains the following.

---

4 This job costing is outside the Maintenance Management area which is a part of SAP's RM-INST and RK-A system.
Exhibit 8.2 Contents of RD Cost Centre Accounting (draft) paper

<table>
<thead>
<tr>
<th>1 Functional Area Scope and Objectives</th>
<th>3 Business Processes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Current Systems</td>
<td>3.1 List of Decomposed Business Processes</td>
</tr>
<tr>
<td>2.1 Current Systems Context Diagrams</td>
<td>3.2 Business Process Charts and Descriptions</td>
</tr>
<tr>
<td>2.1.1 Initial Budget</td>
<td>3.2.1 Cost Centre Hierarchy</td>
</tr>
<tr>
<td>2.1.2 Actual</td>
<td>3.2.2 Initial Budget</td>
</tr>
<tr>
<td>2.2 Current Systems Assessment</td>
<td>3.2.3 Revised Budget</td>
</tr>
<tr>
<td>2.3 Proposed System Context Diagram</td>
<td>3.2.4 Actual</td>
</tr>
<tr>
<td>2.3.1 Cost Centre Hierarchy</td>
<td>3.3 Opportunities for Improvement with CCA</td>
</tr>
<tr>
<td>2.3.2 Initial Budget</td>
<td>3.3.1 Cost Centre Accounting (CCA)</td>
</tr>
<tr>
<td>2.3.3 Revised Budget</td>
<td></td>
</tr>
<tr>
<td>2.3.4 Actual</td>
<td></td>
</tr>
<tr>
<td>3 Business Processes</td>
<td></td>
</tr>
<tr>
<td>3.1 List of Decomposed Business Processes</td>
<td></td>
</tr>
<tr>
<td>3.2 Business Process Charts and Descriptions</td>
<td></td>
</tr>
<tr>
<td>3.2.1 Cost Centre Hierarchy</td>
<td></td>
</tr>
<tr>
<td>3.2.2 Initial Budget</td>
<td></td>
</tr>
<tr>
<td>3.2.3 Revised Budget</td>
<td></td>
</tr>
<tr>
<td>3.2.4 Actual</td>
<td></td>
</tr>
<tr>
<td>3.3 Opportunities for Improvement with CCA</td>
<td></td>
</tr>
<tr>
<td>3.3.1 Cost Centre Accounting (CCA)</td>
<td></td>
</tr>
</tbody>
</table>

(Source: BHP-SPPD data)

The Supply department RD (draft) paper contains the following.

Exhibit 8.3 Contents of the Supply RD (draft) paper

<table>
<thead>
<tr>
<th>1 Functional Area Scope and Objectives</th>
<th>2.1.6.1 Current Systems Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Scope</td>
<td>2.1.6.2 Current sys. context diagram</td>
</tr>
<tr>
<td>1.2 Objectives</td>
<td>2.1.7 Supply Arrangements</td>
</tr>
<tr>
<td>1.3 Definitions</td>
<td>2.1.7.2 Current syst. context diagram</td>
</tr>
<tr>
<td>2 Current Systems</td>
<td>2.2 Contract Services</td>
</tr>
<tr>
<td>2.1 OMS Supply system</td>
<td>2.2.1 Current system context diagram</td>
</tr>
<tr>
<td>2.1.1 Requisitioning</td>
<td>2.3 Transport Services</td>
</tr>
<tr>
<td>2.1.1.1 Current Systems Assessment</td>
<td>2.3.1 Current system context diagram</td>
</tr>
<tr>
<td>2.1.1.2 Current sys. context diagram</td>
<td>2.4 Raw Materials</td>
</tr>
<tr>
<td>2.1.2 Inventory Management</td>
<td>2.4.1 Current system context diagram</td>
</tr>
<tr>
<td>2.1.2.1 Current Systems Assessment</td>
<td>2.5 Manufacturing Services</td>
</tr>
<tr>
<td>2.1.2.2 Current sys. context diagram</td>
<td></td>
</tr>
<tr>
<td>2.1.3 Purchasing</td>
<td></td>
</tr>
<tr>
<td>2.1.3.1 Current Systems Assessment</td>
<td></td>
</tr>
<tr>
<td>2.1.3.2 Current sys. context diagram</td>
<td></td>
</tr>
<tr>
<td>2.1.4 Cataloguing</td>
<td></td>
</tr>
<tr>
<td>2.1.4.1 Current Systems Assessment</td>
<td></td>
</tr>
<tr>
<td>2.1.4.2 Current sys. context diagram</td>
<td></td>
</tr>
<tr>
<td>2.1.5 Warehousing</td>
<td></td>
</tr>
<tr>
<td>2.1.5.1 Current Systems Assessment</td>
<td></td>
</tr>
<tr>
<td>2.1.5.2 Current sys. context diagram</td>
<td></td>
</tr>
<tr>
<td>2.1.6 Administration</td>
<td></td>
</tr>
</tbody>
</table>

(Source: BHP-SPPD data)

A similar structure is followed to list the contents of the RD paper for Labour Costing. It contains the following high level contents.
Exhibit 8.4 Contents of Labour Costing RD (draft) paper

1. Functional Area Scope and Objectives
2. Systems
   2.1 Current Systems Assessment
   2.2 Current Systems Diagram
   2.3 Proposed System Context Diagrams
3. Business Processes
   3.1 List Decomposed Business Processes
   3.2 Business Process Charts and Descriptions
      3.2.1 Set Up Master Data
         3.2.1.1 Define Labour Categories
         3.2.1.2 Identify Prov. Base Percentage
      3.2.1 Calculate Total Number of Employees per Cost Centres
      3.2.2 Calculate Budget Details
         3.2.2.1 Calculate Total Number of Employees per Cost Centre
         3.2.2.2 Calculate Budget Rates
      3.2.3 Process and Calculate Actual Details
         3.2.3.1 Calculate Total Number of Employees per cost centre
         3.2.3.2 Calculate Actual Costs
         3.2.3.3 Calculate Actual Provision Charges to cost centre
         3.2.3.4 Review Performance Related Payments
         3.2.3.5 Review General Ledger Accounts
         3.2.3.6 Review Provisions
      3.2.4 Perform Planned Value Review
      3.2.5 Calculate Workers’ Compensation
3.3 Opportunities for Improvements
4. Proposed interfaces

(Source: BHP-SPPD data)

The high level draft contents of the General Ledger RD paper includes the following.

Exhibit 8.5 Contents of General Ledger RD (draft) paper

1. Functional Area Scope and Objectives
2. Systems
   2.1 Current Systems Assessment
   2.2 Current Systems Diagram
   2.3 Proposed System Context Diagrams
3. Business Processes
   3.1 List Decomposed Business Processes
   3.2 Business Process Charts and Descriptions
      3.2.1 Maintain Chart of Accounts
      3.2.2 Process Journal Entries
      3.2.3 Manage Accounting Periods
      3.2.4 Manage Data Posted
      3.2.5 Manage Ledger Reconciliation
      3.2.6 Satisfy Taxation Requirements
      3.2.7 Produce Financial Statements
      3.2.8 Perform Intercompany Accounting
      3.2.9 Define Systems Controls
      3.2.10 Satisfy Auditors Requirements
      3.2.11 Produce Reports
   3.2.12 Identify Prov. Base Percentage
   3.2.2 Calculate Total Number of Employees per Cost Centres
   3.2.2.2 Calculate Budget Rates
   3.2.3 Process and Calculate Actual Details
   3.2.3.1 Calculate Total Number of Employees per cost centre
   3.2.3.2 Calculate Actual Costs
   3.2.3.3 Calculate Actual Provision Charges to cost centre
   3.2.3.4 Review Performance Related Payments
   3.2.3.5 Review General Ledger Accounts
   3.2.4.1 Review Provisions
   3.2.5 Calculate Workers’ Compensation
3.3 Opportunities for Improvements
3.4 Manage Data Posted
4 Proposed Interfaces

(Source: BHP-SPPD data)

The Process Costing RD paper contains the following:

Exhibit 8.6 Content of the Process Costing RD (draft) paper

1. Functional Area Scope and Objectives
   Scope - Business Function
   Department and Organisations Affected
   Objectives
2. Systems
   2.1 Current Systems Assessment
   2.2 Current System Context Diagram
   2.3 Proposed System Context Diagram
3. Business Processes
   3.1 List Decomposed Business Processes
   3.2 Business Process Charts and Descriptions
      3.2.1 Actual Monthly Moving Average Product Costs
      3.2.2 Component Analysis
      3.2.3 Commercial Price of Coal Only Divisional Reporting
      3.2.4 Commercial Prices of Coal, Iron and Hot strip (Business Unit Reporting)
3.3 Opportunities for Improvement
3.3.1 Process Costing
3.3.2 Component Analysis
3.3.3 The Effect of Commercial Prices on SPPD and Business Unit Profit
4 Proposed Interfaces

(Source: BHP-SPPD data)
The presentations of other RD papers were found to be somewhat similar in structure. However, the intention here is not to provide the details of all these papers and its contents, rather, to point out what could be the "machinations and inscriptions" involved in this RD phase of the IBS fabrication. Moreover, the contents that were listed in the above exhibits were very high level draft listings of the "requirement definitions".

During this phase, there was a series of meetings held in the quasi-laboratory to identify the scope of work and prototype the business processes that are required to develop and implement the IBS at SPPD. As the fabrication moved towards the functional design phase, it seemed as if the "black boxes" were closing slightly, at least to me. This was because each individual team and individual fact-builders were busy with setting up and checking the internal logic (validity) of the "machines and inscriptions". That is, they were busy with navigating the systems "inscriptions" - or 'playing with computer systems'.

8.2.3. Functional Design (FD) Phase

Similar to the RD phase several objectives were also set out for the "Functional Design" (FD) phase of the fabrication of Integrated Business System (IBS) project. Some of these objectives as extracted from an FD paper are as follows:

- To map the requirements for the areas listed in the functional scope that were specified in the "Requirements Definitions" papers to the SAP system.
- To specify interface requirements.
- To identify those areas that cannot be mapped against SAP in order to consider how they will be handled in the resultant system.
- To provide an implementation timetable for the project and a list of deliverables required to meet that timetable.
- To provide information where either new functionality or changes are required in the SAP system through modifications to the package.
- To gain sufficient understanding of the nature of the project:
  a) to progress to a prototype situation immediately following the functional design phase
  b) to estimate user acceptance and test criteria
  c) to estimate hardware requirements
  d) to specify initial load and data conversion requirements from existing systems

---

5 The other RD papers included the papers from the engineering department, plant maintenance management, assets accounting, human resources management, accounts payable, technical support, interfaces, BARS, and operating result analysis.

6 For each of these RD papers there was a long list of decomposed business processes which were not represented in these high level listing of contents.
• to flag business policy decisions or organisational requirements necessary to implement an integrated business system
• to provide to an Internal Audit team a basic design of the system so that the necessary verification of the design can progress in a timely manner so as not to unduly effect the timing and content of the Detailed Design phase. (Company data)

Most of the meetings and discussions of the fact-builders during the FD phase were dominated by the convincing technical choices for machines (SAP modules) and inscriptions (functionality of the system) and how to 'tie' these to the interested groups. However, a separate set of papers was prepared upon completion of the FD phase of the IBS fabrication. Most of the papers written during this phase were carried over from the work of the RD papers. The contents of these papers are more detailed than those prepared in the RD phase.

The contents of these papers are full of process diagrams, flow charts and descriptions of the business processes and system inscriptions that are required to create and maintain on-line data processing functions in an integrated SAP system environment. For example, major business processes were to be created and maintained in order to run cost centre accounting, such as preliminary set up, create/maintain cost centre hierarchy, create initial budget, create revised budget, monthly actual costs procedures, reporting and year end procedures. For each of these business processes there are several decomposed business processes which need to be maintained. Several tables are to be set up and transactions to be run and maintained in order to create, plan and report these decomposed business processes. For example, to set up the company specific preliminary information using SAP system there is a need for setting up several tables. For example, to set up company specific information for company codes, RK-system components, business areas, tolerances and system parameters in a SAP system environment there is a need for setting up tables such as T001, T001C, T001T, T001G, T20. Tables T205 and T211H are required for setting up cost centre types and alternative cost centre hierarchy. Similarly, tables T200, T201V, T207, T210, T210S, T210D, T251 are to be set up for cost centre planning for such respective decomposed functions as transaction control, planned value period distribution, copy function planning, plan versions, planning standard, planning screens and formulas.
Tables T202, T202R, T230 are to be set up for master records of activity types, valuation of resources and document control respectively. In SAP's RK-system environment there are about two hundred tables to be maintained.

There are lots of intricacies and flexibility in the operation of the SAP system. Take the example of the "account management" function in the SAP system's environment. There are different ways one can create accounts. Transaction TS06, for example, is used to create a general ledger (GL) account master record from scratch. The segment control field plays an essential role in the management of accounts and is, therefore, defined as a required input field in SAP system. The segment control indicator in the account master record determines whether the account is, for example, any of the following:

- a direct account which can be posted by the user,
- an indirect account which can only be posted by the system,
- a resident account which can list all detail lines posted to it,
- a current account which is managed on an open item basis,
- a control account which is used as a reconciliation account for sub ledger accounts. (SAP's RF GL Documents)

Take, for example, activity planning in CCA (Cost Centre Accounting), which is a central concept of cost centre planning and budgeting in the SAP system environment. It is a basis for establishing unit measures. In the SAP system, for example, "activities" are classified into two broad categories: 'normal' and 'statistical' activities (see figure 8.4) where the normal activities measure what a particular cost centre does, such as machine hours and labour hours. For example, in a machining process centre 'Machine Hour' could be taken as a measure of unit. It is the basis on which the output will be measured. At SPPD, these activities are known as 'standard determinants'. The normal activities, in the SAP system, can also be further broken down to sub-activities. For example, repair work, a main activity, can be broken down to three sub-activities such as emergency, normal and preventive repairs.

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7 Some of the transaction codes, functions, parameters and tables that are used in SAP's RK-S cost centre accounting system are provided in Appendix Id. This is to show what types of "inscriptions" that accountants (or otherwise) at SPPD or elsewhere can be tied to the SAP system environment.
The statistical activities are the activities which are used as an allocation base for distributing indirect costs such as square feet and headcounts. Moreover, a normal activity cost can be related to activity or it may be cost independent of activity (see figure 8.4). However, once again, this ethnography does not attempt to elaborate the details of how the activity planning in SAP system operates nor does it assume the agency here. There are various tables to be set up and transactions to be run in order to create and maintain the activity planning in SAP system, such as transactions TK10, TK04, TK05, TK06, TK20 and tables T202, T202R, 202T which are used for activity planning. It is through logical creation of various databases (such as, financial, system and statistical) which made it possible to maintain such a complex planning in an on-line real time situation.

Take the example of management of assets accounting. The management of fixed assets is complex. It embraces many cross-functional activities and knowledge. Not only is the scope and importance of fixed assets evident from the financial side, such as regulations
of tax laws, depreciation rules and investment tax credits; but also its effective management is dependent upon keeping detailed records of the individual parts such as maintenance records, repairs, assets' calibration and replacement records. In a statement, the new group general manager (GGM) of the researched organisation, Paul Jeans, also supports a similar position:

Its [the development of IBS using the SAP system] development will have a major impact not only on our ability to more rigorously manage our costs, but also on the efficiency of related activities such as maintenance management.

At SPPD, the Fixed Assets Register (FAR) was maintained from its corporate head office. It had a very limited access to the FAR. However, with the introduction of the SAP's RA system as a component of the IBS it is expected that SPPD can have far greater access to manage its assets and the FAR. The SAP's RA (Assets Accounting) System is integrated with SAP's other applications modules such as financial accounting (RF-GL), cost centre accounting (RK-S), maintenance management (RM-INST), material management (RM-MAT), and project management (RK-P). There are an enormous amount of inscriptions and machinations for maintaining, creating and changing assets' records (at the items' level) in the SAP environment. As mentioned earlier, there is a functional design paper on assets accounting. A critical question, however, is that whose task is it to manage the assets accounting? At SPPD, it was being managed by the engineering department (see figure 8.3). Though neglected earlier, accountants are becoming more interested in managing the business processes of assets accounting.

We could give as many examples as possible. Theoretically, more examples would lend further support to my earlier argument (of course, following Bruno Latour) that 'an organisational internal control system is no more than tying together people (employees) within and across various functional areas with "things" (operations, machines, and inscriptions)' (see figure 8.1). That is, it would further enhance our understanding of how various occupational groups at SPPD such as Finance and Planning, Supply, Engineering,
Maintenance Management and Human Resource departments have attempted to fabricate the IBS by tying themselves to information systems that become a common platform.

8.2.4 Detailed Design Phase

I left the quasi-laboratory before any paper on the detailed design was produced. As the name suggests, the aim of such a phase was to prototype and design in detail the "machines and inscriptions" that are required to implement the IBS. As well, some objectives of this phase might include the following: to specify the data conversion from the old to new, to build and test all requirements of the machines and inscriptions (SAP system modules), to estimate the hardware requirements, to re-design systems and procedures, to train the users and prepare for the actual installation of the system.

8.3 CONVINCING ARGUMENTS FOR PEOPLE AND CHANGE MANAGEMENT ISSUES

The design of the system is only a part of the fabrication process (Preston et al, 1992, 567). Chua argues that "to achieve victory, new converts would need to be formed, critics silenced, competitors overcome, sceptics convinced and technology shown to 'work' in many, diverse workplaces" (1993, p22).

Change is not just a constant, rather, it is a continuously transformative process. Latour (1987) argues that controlling the moves of all the enrolled actors during the process of fabricating facts and technology is a crucial part. Latour argues that

(i) if people are not interested, or if they do something different with the claim, the spread of a fact or of a machine [technology] in time and space does not take place. A few people toy with an idea for a few days... (1987, 121)

Thus, 'keeping the interested groups in line' and managing change are a crucial part of fabricating the facts and technology. Managing change was not only limited to convince the allies, but also to own over various sceptics and detractors, obtain commitments from the higher level management and overcome various "stop/start" syndromes as well as train the users. At SPPD, at the time, it was expected that out of eight thousand employees about
three thousand would use the proposed system. It was not thought to be an easy task to convince all such "actors".

Latour notes,

It is an easy job if you want to convince a few people of something that is almost obvious; it is much harder if you wish to convince a large number of people of something very remote from or even contrary to their current beliefs. This metaphor shows that the relation between the amount of work and persuasion depends on the circumstances. Convincing is not just a matter of throwing words about."(1987, pp57-58)

"Fabrication may take place quite differently in different circumstances" (Chua 1993).

In addition to the fact-building process in the quasi-laboratory, there were some interactive video courses made available for understanding change (Applied Learning International Inc, hereinafter ALII, 1991). The names of these video courses were: Understanding Change; In Times of Change: Helping Ourselves; and In Times of Change: Helping Others (ALII, 1991).

Some viewed such an understanding about change as just an academic exercise. The newly appointed implementation manager (SS) of the quasi-laboratory does not believe so. His belief about change management is as follows:

_I think that change management will be essential... Because, such an approach to the project up until now has been that change management is regarded as somebody's responsibility and that we all do wonderful things to make it happen. My belief is that change management is essential, that it is subtle and that it is not orchestrated in a conscious way. I mean we don't send out pieces of paper saying that... you don't set up a meeting to talk about change management. I believe change management occurs in terms of the way we communicate with people and get people to work out how they are going to accept the new system. If you do that effectively then change will occur and it has been managed. It has been managed in a subtle way and not highly profiled... I don't accept that legitimate approach. We need to think through the strategies in which we implement change, make sure that change is accepted by those who are effected and that it is a change management process._ (SS interview - Appendix 3)
8.3.1 Why does it take a long time to manage a change?

Initiating any change is always a challenging task. One of my interview question includes "why does it take a long time to manage a change?" Some of the responses were as follows (for more see Appendix 3).

R1 In the main, you are not just talking about an installation of a computer system. What you are talking about is changing the way people do things and changing the way people do things in a manner which gets acceptance, in a manner that enables success to be derived from the change, which requires time. History has shown us that things that are done too quickly without thought usually have to be done again. (JH's interview see Appendix 3)

R2 I don't think it necessarily takes a long time to manage a change. It depends on the level of change. Simple changes are easy to make. Changes that people have been wanting are easy to make. Changes can be made within a couple of days are not very complicated, and easy to make. If there is a need for complex change such as changing the direction of an organisation that takes a long time. A reason it takes a long time is that I think there is usually perceived change required and that the type of change, that is - change to what, is often unknown or at least to be worked out, and more frequently has, to achieve that new change, become complicated. If you take the SAP project, for instance, it's a complicated change required, a very big part of our operations in terms of the way we manage (our business). So it's not a change that can be made lightly and one that's going to take a short time because to get through change really requires (regarding) what impact it has on our business and how we can manage our business in the future. It also requires change in a lot of people in terms of skill and knowledge and in their approach to the job they do. So what is necessary, therefore, is for a lot of ownership of the change to occur... because a lot of people are involved. And, assessing this will take time, because there will be issues and concerns people raise that are contrary to the direction we are taking. These have to be addressed before those people can accept the change that has been proposed. All of this discussion takes time and (needs to be) worked out, discussed and negotiated. (SS's interview, see Appendix 3)

R3 I cannot comment on the earlier things of the project, but, at this stage, things are so large - the integration issue - linking everything together... To be successful, we could not implement the costing without implementing the other... as time went on we have to tackle it from the Slab & Plate point of view, not from an individual area of function. That's one of the reasons it takes such a long time... Secondly, phases are so large... to identify the impacts at various levels... getting feedback... training and implementing et cetera... takes a long time. (PV's interview, see Appendix 3)

R4 The education needed to get people mind attuned to manage a change - we have already started that in the SAP project. We started putting stories in the Kembla News. We started telling people this is happening. We are trying to prepare
people for change. What I found is people generally don't like change. When people are in a work environment or at home change is trauma and stress. If I say to a person out there you have done this job in this way for five years, tomorrow we want you to change, many people can't cope with that some people even resign and leave. So you have got to manage change very carefully and manage your people very carefully. You have to do it over a period of time quite slowly, sometimes, because some people can accept change but very slowly. In the end, some people don't accept change at all and those people will leave the organisation or find jobs. I have experienced that already here.

To manage a change takes a long time particularly if you consider some people talking here on the educational level... because they don't know how to use the keyboard. They are horrified of the machine. Of course, there is lot of stress as well. You need time to manage that and then bring people into it slowly. Tell them what's happening and prepare them for it. Train them for it and make them feel comfortable with the change before it's implemented. (K Rommel's interview, see Appendix 3)

R5 Because people don't normally accept change. There is always complaints about it. If you are shopping they change the barter on you... all of a sudden it disappears - like paint. A year ago there was a wonderful paint for... which you could put everywhere... did everything... wonderful too! People are suspicious of change, they simply don't like change, in particular, when management forces them. So, it takes time to change. Despite the fact that we have spent a lot of time improving communications... the communication of change... it is simple to say somebody look here is something new and this is how it is going to work and so on. It's change from another system - if you push this button you will get this. But, communicating change is never simple. Often they look at change as being a challenge. In that case there will be people who are going to say that they are going to get rid off a job and so on... there is another robotics system... push button... that means there will be fewer people required around the plant. In the struggling economy we have in Australia at the moment where workers are suspicious about management... everyday people are loosing two thousand jobs... all sorts of these things. Change is very hard to sell. So, it's takes a long time to manage a change. That's what the change management program has to focus on.

The training manager for the program is looking after the change management. He will work with a team and with myself. So it will be a team role, he will have the responsibility once we determine and approve his program. (JB's interview, see Appendix 3)

R6 People are comfortable about what they have. Scared of what they don't have... If you go and ask them they say "Hi if we do the same thing that will be fine". They don't have time to think about it, whether they are lazy or have not got enough time to think about it or scared - if they say something, it will mean more work or less jobs or whatever. I just think it takes a long time to instil a different philosophy in people.
End users training is most important. End user training is change management to me. Mr Steve Senders is looking after this at the moment. (K Reid's interview - see Appendix 3)

R7 I don't necessarily hold that it takes a long time to manage a change. It depends on the size of the change, numbers of people involved in the change, the amount of culture which would be affected by the change. In other words, how deep this (the change) goes into the way people think in work. In other words, how long you have been a Labour voter. If you have been a Labour voter all of your life time, you don't change easily, because it's a party culture. If you swing from one to another every time when voting comes around, then, it is easy for you to have a change.

I can give you an example, we are presently going through changing the culture in Maintenance to have people chargeout their costs based on the work they do. In the past, they would have been able to chargeout their labour costs to the job just by writing a job number on their time sheet and not worrying about whether they have a job or not. Now, a cultural change or the change will be you cannot chargeout your cost unless you have a job. If you did not have a job in the morning then you cannot say my cost will build up in a particular area. That's a major cultural change. That's business now - the way we do maintenance work. That's cultural change. We started to put that in place in September last year and it will be in place in May this year. So it has taken six to seven months to bring about a cultural change which is a major change for people, being able to charge the customer whatever they like to... now only being able to charge the customer. (CC's interview - see Appendix 3)

From the above responses it is clear that managing change depends on the nature and level of change. Of course, literature on change management would have supported all these responses in one way or another. However, this ethnography is not intended for such a level of analysis. Rather, it shows the struggles involved in how accounting-in-action persuades, fabricates, constrains and deploys the technology.

8.3.2 Some Behavioural Issues

Several behavioural issues can be taken for analysis and representation. In the following some of these issues, of course as I see them, will be addressed.

8.3.2.1 Ownership of Information

Since a major focus of this study is on understanding and representing the processes of fabricating the IBS development at SPPD, therefore an immediate behavioural issue, as I
see it, would be the struggle for the "ownership of information" by the interested groups (various occupational groups) involved in such fabrications.

I asked the question whether the interviewees have seen any 'political struggles' (including interpersonal and organisational conflicts) amongst the members of the project or the functional owners. If so, what could be the major reasons for such conflicts? [See Appendix 3 for such responses.]

An interviewee responded as follows:

Oh, absolutely! I think, in any project or organisation you are going to have struggles with the organisation and personal conflicts. I have seen both of them in this project. I have been involved with some of them myself. I think we are going to see more of it just because of the nature of the project. It's an Integrated Business System (IBS) which means that when decisions are taken there are generally three or more functions involved. You own a function... your upstream and downstream functions... which means that two or three parties at least have to come to a decision or consensus. When you have that you are going to have struggle depending on the strength of the individual and ideologies they follow - what the final solutions are going to be.

... My office is in this (commercial) building. I only go down to where the team meets periodically. So I guess I don't see a great deal of it - whereas when you are sitting with forty people you probably notice that those things are happening more often. I certainly see the conflicts within the steering committee meetings when teams get together.

We have not come through the organisational issues yet. I think that will happen through functional design where we have already seen more "toing and frowning" between functional owners and teams about ownerships [of systems and data]. We have an interesting one at the moment: the ownership of tables in SAP. You are most probably aware that the SAP system is very much table driven and [thus] who controls the tables [is very important]. I have a very firm view that if there is a table that affects Supply business then Supply will control it. Being an integrated system quite often there is more than one discipline using a table and certainly, from my perspective, I can't allow Finance controlling my tables. It has already been started. That is going to become a fairly serious issue. Because each function needs to control their own destiny. You can't have Finance controlling Supply or Supply controlling Maintenance - in regard to the operations of those areas, the issues of maintaining tables are crucial. (See Appendix 3 for Kerl Rommel Interview)

The above primary information suggests that the "ownership of information" in an IBS environment is something like the source of power in managing the management control
system (MCS) of an organisation. In the SAP system's environment such sources of power can be "tied up" with various occupational groups via the setting up of a range of "tables" behind the screens. This is the reason why the SAP system is sometimes referred to as a table driven system. In other words, the way in which the tables (in general, inscriptions) would be set up to block or unblock the information which would reflect the ownership of information. This would be a kind of battle that the various occupational groups and departments at SPPD have to fight over.

8.3.2.2 Structural differences and implications of integration

In the SAP system's environment different hierarchical segments (see figure 7.1) can be used for integrating the sub-systems. For example, Maintenance management can use either RM or RK-P project structure instead of RK-S cost centre accounting (CCA) structure. In such circumstances, integration may not be achieved and, as a result, this can give rise to behavioural implications after the proposed system implementation. At the time of my field study, for example, the Maintenance management demonstrated that they would be using project structure (RK-P) instead of cost centre (RK-S) structure in designing the RM-INST hierarchy. Having been aware of such information I asked a question to a project member: "How do you integrate the Maintenance costing with the cost centre accounting?"

Reply from GA:

It would not be conflicting because they are doing it simply to come up with the budget. They are trying to come up with a budget at each functional location. What they will come up with is a budget, say budget for BOS at each functional location. We will then have to manually, or by writing some kind of program, take data out of these and do cost centre planning. You are quite right that there is no integration in the first place. They are using this as a tool to capture the information of their budget at functional location level. We will then sum up that at the cost centre level. Then, at the cost centre level we will do our Maintenance plan. This is part of our budgeting... they are two separate functions. You are right there is no integration. That's for the budget.

When it comes to 'actual', all the actual will go against orders and they will be closing orders for each job...
A further question was posed: "When the issue of cost component split will arise can you then see and aggregate all costs?"

Reply from GA:

This comes back to the question of what we define as our cost component splits. Because if you think about it... if you have a component split which shows your labour and Maintenance costs... it might not add up to Maintenance. What we are saying is that labour excludes Maintenance. We could do both but it's a matter of setting up the system.

Another question was posed: "Do you see any difference in terms of benefits for going RK-P structure instead of RK-S structure?"

Reply from GA:

Well, it just a technique. They [Maintenance management] are talking in terms of functional locations. There are ten thousands of functional locations. If we go at very low levels, that is at the items' level, it is possible to get about one hundred and fifty thousand functional locations. If they are going to prepare a budget for these locations... say you have the Hot Strip Mill (HSM)... HSM is broken down into four areas - furnace and a couple of others... then furnace is broken down into seven areas... then each one of these areas is broken down into a couple of other areas... it goes down to about five levels... So they have identified the functional locations. What they are creating is a project for each cost centre then sending the order costs to cost centres. But, in budgeting there is no integration between RK-P and RK-S Cost centre accounting. To use Maintenance data for budgeting and cost centre accounting we have to set up an automatic function to sum up for our purpose. So this is just a technique they are going to use for their budgeting. There is no automatic integration for the budgeting side. We have to somehow get into those for updating cost centre planning.

It is because of systems reasons that Maintenance is going for RK-P structure. We don't want to have ten thousand additional cost centres and that would make our cost centre accounting very cumbersome. If we want to run months end transactions to calculate and allocate variances... currently if we are going to have fifteen hundred cost centres... now if we have to add another ten thousand cost centres then you can imagine how bigger the calculation is going to be.

We are not going to use 'plant field' in Cost Centre Accounting. RM will use 'plants'. I don't know what the decision is at this moment in regard to Maintenance, whether they are going to use just one plant or many. However, they have to use at least one plant. If you use multiple plants I think there are some difficulties in creating Bills of Materials (BOM). I think routing can be done plant specific - so if you use same BOM in different locations you have
to re-create one of those plants. But I think they are going to go with one plant.

Although there is a need for further research, the differences in the use of differing hierarchical segments (see figure 7.1) can give rise to conflicts amongst various occupational groups.

8.3.2.3 Change of Terminologies

There would be many changes in terminologies if the proposed IBS is implemented at SPPD. The consequence of such changes can have immediate behavioural implications. When any terminology is used for a long time it becomes an acculturated issue. For example, changes in the existing job numbering system may have some immediate behavioural implications. For example, at SPPD, the 50 series numbers are used for capital costing commitments. If the new system is implemented they would be using different numbering systems. There would also be many new terminologies. An apposite example is "cost component analysis" in costing. A team member commented as follows:

It's a new concept to me when I started learning about SAP. Basically what it does is that at any point of time you can take either any activity whether it is a product, process or service... you can design it to view costs of any activity at any particular point of time [ie, aggregation of cost at any particular point]. Say you have a number of cost centres charging to each other and that are all made up of the same three cost elements... say they have three cost elements - labour, stationery, raw materials, but they charged each other... [the interviewee took a piece of paper to explain it]. There are two types of cost component splits: primary cost components split and secondary cost components split.

Secondary cost components give you the ability to split costs based on activity by cost centre and specific activity. You have to run a specific transaction in order to get this view and produce a specific report. It lets you analyse total costs in different ways. Our old DISC could not do that. These cost component splits are very useful management information but the cost accountants previously asked to do some of these tasks as part of their job. They had to do that at a bit higher level. Now with this facility we can do it at any activity level automatically.

In the past it was basically a manual or PC based analysis. We had to develop an understanding of how to use this by ourselves, then the next step would be for us to interpret that for the accountants or final users. So, they have the concept of how to use this because we just give it to them. We can do this cost component split at any level for each cost element. (GA's interview)
It should be emphasised that to manage and communicate all such changes there is a need for allowing enough time. The great tasks ahead of change management, at the time, were to focus on the restructuring the jobs, rearranging the relationships, understanding the personalities of the interested groups and manage them, that is, "tying the interested groups with inscriptions". Whether it is a "first order" or "second order" change (see Laughlin 1991) may require another level of analysis.

3.2.4 Accountability in Managing the IBS and Various Occupational Groups

An understanding is that the lack of clear accountability in managing future IBS at SPPD is not unexpected. Throughout my interviews and conversations with the project and non-project members it is evident that there would be some struggle for such a settlement after the implementation of the proposed system at SPPD.

8.4 ROLE OF FUTURE ACCOUNTANTS IN MANAGING COST MANAGEMENT AND OTHER SYSTEMS AT SPPD

Business is going through a period of great changes. Increasing competition in international markets, coupled with advances in technology and increasing attention to customers' needs, are all putting new pressures on management. Kings et al (1991, p294) argue that "anyone involved with leading organisations [ie, world class organisations] over the past decade has witnessed an emerging new culture in which managers have become increasingly able, proactive and innovative". According to Kings et al (1992), the development of IT (Information Technology) and its relationship to management accounting is an example of such a culture. Such an emergence has not only created new opportunities and pressures for management accountants, but also challenges their traditional roles as well as the boundaries of what can constitute the nature and scope of management accounting. The previous ethnography regarding SPPD's affairs has also focused on such opportunities and pressures. To gather together some information about the future role of accountants I posed a question to a few fact-builders of the quasi-
laboratory: "What major roles do you think accountants will play in the future under the proposed system implementation?"

Some of the responses were as follows.\(^8\)

\textbf{R1} The role of accountants has been traditionally defined in two major areas - financial accounting and management accounting. I think with the introduction of this system, on the financial accounting side, we will bring a lot more integrity. It is because of the ability to enter information once at source. On the management accounting side, I obviously see the area of greatest scope for change in the role of the accountant... analysis and assisting management in making decisions about options available to the business that are more valuable than a lot of number crunching that is often you found because of the lack of quality measurement to support the conclusion that has been reached. (JH - Project chairperson)

\textbf{R2} They would have a more active role in the management of the business unit... They will do less number crunching. Rather, they will be involved more with the process improvements. In future accountants need to have multi-disciplinary skills. (SR-S)

\textbf{R3} From a management accounting point of view - accountants have to be involved with the operational knowledge of how a business work. They must have multi-disciplinary knowledge. No accountant will survive without the knowledge of technology, that is, computer literacy. In future, the structure of the management accounting job will be more decentralised at various levels [That is, at the users' desk]. (DK)

\textbf{R4} Accountants' role will change from "number crunching" to one more of analysing the information and producing reports. Most of the standard procedures of accumulating information would be standardised such as financial accounting... Accounting will become more cross functionally focused than it has ever been in the past. More focus on Management Accounting than on Financial Accounting [which would be mostly standardised] as far as managing business processes are concerned. Accountants in this organisation should have to have a cross functional focus in future... (IM)

\textbf{R5} I think we are moving towards a more "business analysis type" role... more interactive roles and intermediary role [than stewardship role!]. Future accountants need to focus more on understanding the business, market in which the business operates, costing strategies, computer knowledge and how to work in a group situation. They have to understand business processes... [Not only do they need to understand and be knowledgable about how the proposed CMS will operate at SPPD, also] [T]hey have to [at a certain level] be knowledgable of various PC based software packages (including

\(^8\) No order is followed when numbering the responses from \textit{R1}, \textit{R2}... \textit{Rn}.
off-the-shelf packages) for drawing flow charts and preparing complex systems diagrams. They have to have presentation skills. (DP).

R6 Accountants will do less number crunching. Rather, they will do more analysis type work. There will be some new specialised areas such as production and costing systems reporting under the proposed implementation... We are moving away from a 'number crunching' role to take more of a management type role - produce reports and analyse them and manage them and progress with technology. (VL)

R7 They should be looking at improving the system. They have to change their way of thinking about analysing the data on a real time basis. (AS)

R8 So far, accountants have been playing a major role in this project and will continue to do so. Though there will be some re-organisations of desks moving down to the source entry, they will still play the supervisory roles. They will still be responsible for providing cost centre information... (PH)

R9 Accountants will have more direct control. They will be involved more in analysing the activity input. (BW).

R10 Well, our requirements' definitions stay at our functional design stage and ... what SAP systems can offer as compared to what we have now. There will be changes in the way in which the accounting function will operate. It [SAP system] offers improved accountancy procedures. It will bring some of our current procedures out of the dark into modern times. It will be accessible to a far greater range of people. It has a big value as far as the financial side of things [is concerned]. It has a big advantage in finance areas. It has big advantages for a whole range of things... asset registers, for example. Our young commerce people working on the project already believe that SAP system can provide a lot of benefits to the business. They find it is quite exciting.

I think, the implementation of a new system will change the way we do things here. Accountants are part of the whole. The proposed system should make their job easier. However, they will always have the key role to play in managing the change. (JB -Project Director).

R11 In comparison to their current roles most positions in the Finance and Planning area will remain the same, except few accountants will become system administrators. (DR)

R12 They will be engaged more towards analysis type of work rather than entering or re-entering off-loaded input data... (PN)

R13 Future accountants at SPPD have to be knowledgable of the proposed system. At the same time, however, they can't be totally ignorant about PC based data operation. Once the integration between various feeder systems will be made using the SAP system, the accountants (especially in Finance and Planning) will play an advisory role for including the data interpretation and the way in which planning and management reporting has to be set up. (PV)
R14 Future accountant needs to be aware of many practical situations... (HF)

R15 Hard to tell. I personally don't think accountants have traditionally been driven by such an increasing role. Under the proposed SAP system that would have been even more down... More hands on the system are required... Accountants were on the top of the tree now going down... (RW).

R16 I don't understand what role they play now (laughter!). I think, accountants will have a less direct practical role. Rather, they will have a more logistic role in the future. Because, I think, the system will manage a lot of day to day data. I don't think number crunching will be a major task for accountants. Their ability to understand the details that had in the past may not be a necessity in future. (Rather) they need to conceptualise differently in a broader scale to understand the impact of the business that different financial systems have instead of sticking with the number crunching." (SS - Implementation Manager)

R17 I think the role of accountant will go more away from manual type entries - the manual costing - the journals that sort of things. The number of people required for the Finance & Planning function will diminish because it will become fully mechanised. Whereas, at the moment, Finance is partially mechanised and partially manual. I think a lot of the entry work that the accountants are doing will be done by the users. The input of data will be done at the plant level, i.e., at source. I think the accountants' role will change away from more clerical to more analysis such as managing an executive information system than that of number crunching. (KR)

R18 If accountants are fair they will be working far more closely with management to provide with the analysis of the data that provides a clear understanding of what the company is doing financially. I think that the accountant will be much closer aligned with the management and what they do...

The system will support more the users and what their information demands are. They [accountants] won't be doing very much work, not that they do very much now. They won't be doing very much work with supporting the users of the system in cost analysis, the system will do that.

I have a philosophy that managers don't spend money. It's the users, the people down on the shop floor, who spend the money. Managers only have the ability to guide the direction in which people spend money. So, the accountant will not be associated with the expenditure and the control of the expenditure of the money any more. They will be reporting more on the way money will be spent and guiding policy on expenditure issues. (CC)

Understanding business processes in an IBS environment is essential, that is, how data flows through the systems, and what are the necessary transactions to accomplish the task of creating and maintaining particular business processes in such an environment. This is
essential not only for the management accountant or accountant in general, but anyone who is going to be the user of the proposed system needs to know the system inscriptions (ie, data processing functionality, inscriptions for data capture, storing and retrieving, etc). Knowing how to manage various business processes and system's inscriptions will ultimately dictate the ability to manage the respective functions of information processing, which will become the decider of who will be owning the management control system. If accountants, for example, do not take the initiative of learning and managing such inscriptions, other occupational groups will make their agendas to incorporate such learning.

Although it may not be generalisable across different organisations, from the field work undertaken and the above responses, the following changes of focus in respect of the roles of future accountants under the proposed implementation of IBS at SPPD are apparent:

1. Information technology is a challenge for accountants.
2. Accountants are business process analysts.
3. Accountants are involved with process improvement at all levels.
4. In an IBS environment there will be less number crunching for accountants. Rather, they will be doing more analysis and reporting type of work.
5. Accounting is moving to the two extreme points, that is, to users' desk or input desk and to the centrally controlled offices.
6. Accountants need to have multi-disciplinary knowledge with a cross-functional focus such as assets' management, maintenance management, sales and marketing, supply and warehousing, and production operations. This is because the process of deriving the plans necessitates cross-functional communications and commitments.
7. Accountants need to change in attitude to manage cost management systems on a real time basis.
8. Accountants will have more direct control in activity inputs or business processes.
9. Some accountants will become (information) systems' administrators.
10. There is a greater scope for change to open up new opportunities for managing cost management and other systems in an IBS environment than in financial accounting as far as data processing and the integration side of it are concerned.
8.5 Summary and Conclusions

As in chapter seven, the ethnography of this chapter has displayed some of the stories and rhetoric of fabricating the cost management and other systems in the integrated SAP system environment.

Latour (1987) argues that "there is no way of tying together interested groups (people) unless 'things' are tied with them". Following this argument, in the introduction an analogy is advanced in that an organisational internal control system is no more than tying together people (employees) within and across various functional areas with "things" (namely, operations, machines, and inscriptions). As intended, following this simple analogy, this chapter has examined in some detail both the (a) "machinations" and "inscriptions" and (b) convincing arguments for people and change management issues involved in fabricating the cost management and other systems via the quasi-laboratory. Accordingly, the ethnography of section 8.2 has displayed the "machinations" and "inscriptions" involved in fabricating cost management and other systems at SPPD using the SAP system. Not only has this ethnography focussed on the new structure, plans and scope of the quasi-laboratory (Phoenix 21 project) but it has also addressed multiple happenings of fabricating IBS via three different phases such as 'requirement definitions' (RD) phase, 'functional design' phase and 'detailed design' phase. This suggests that an enormous amount of machinations and inscriptions are required in order to develop and build information technology. It also unveiled various "language sets" or vocabularies that would impact on the future lifeworld of accountants at SPPD and elsewhere.

The "machinations and inscriptions" required for the design of a technology is only a part of the fabrication process (cf Preston et al, 1992). There are people and change management issues. Section 8.3 has addressed some convincing arguments for such issues of the implementation of IBS at SPPD. The findings of this section can be interpreted in many ways. As I see it, change management is essential in any fabrication, which is not only contextual but also depends on the nature and level of change. This section also advanced
some behavioural issues which seem to be looming or are imagined to be possible ones, such as the 'ownership of information' system can be seen as something like the sources of power in managing information systems and hence the management control system of an organisation. Also, the use of a particular technology (such as the SAP system) and its differing use of hierarchical segments for integrating the sub-systems can give rise to conflicts amongst various occupational groups after the implementation of the proposed system at SPPD. It is suggested that there is a need for allowing enough time to manage and communicate the changes of terminologies due to the proposed system implementation. Moreover, understanding personalities, restructuring the jobs, rearranging the relationships and designing accountability amongst the interested groups were also seen as important considerations for successful implementation of cost management and other systems.

Finally, section 8.4 addressed some possible future roles of accountants at SPPD.
Chapter Nine

Conclusion

9.1 Introduction

This thesis is the outcome of a "critical accounting study". It has been concerned not
only with an understanding of the problematic "knowledge claim" but also with examining
the fabrication of accounting knowledge within a particular organisational and social
context. This study supports the view of 'how little we know about the actual functioning
of accounting systems in organisations' (Hopwood 1979, p145; cf Burchell et al, 1980;
1993). As well, this study assumes that the roots of meaningful, yet uncertain, social and
political considerations of the actual functioning of accounting are in organisations. In
other words, neither accounting nor organisation has significant independent existence;
rather, they are symbiotic and this also has social ramifications. Moreover, central to this
research programme is the belief that embarking on a major study is dependent upon the
way in which the researcher: (1) resolves the theoretical and epistemological disputes in 'the
doing of research' (Chua 1988b) and (2) relates this to the analyses at the 'action-oriented'
level - that is, at the level of empirical investigation.

It is understood that the research strategies and the theoretical stance of 'mainstream
accounting research' (see Chua 1986), generally known as positivistic research, are limited
in carrying out research on 'accounting-in-action'. In contrast, the 'critical accounting'
literature is seen to have much to offer in researching the context of accounting. Not only
are the theoretical stance and research strategies of critical accounting research diverse, they
are growing. As a propaedeutical reflection, the first part of the study was involved with an
alternative theoretical discourse in order to understand the problematic "knowledge claim"
and also consideration of a socio-theoretical rationality in the 'doing of critical accounting
research'. In particular, at the propaedeutical level, the study adopted a Habermasian
critical theory approach for such an understanding (cf Habermas 1974, 1979, 1984, 1987).
At another level, it adopted the work informed by Latour (1987) and that of his colleagues for a further understanding of some non-positivistic methodological corollaries (cf Preston et al 1992, Chua 1993).

On the basis of the framework and the understanding that were advanced in the first part of this thesis, the second part has presented a critical ethnography on the empirics collected through the field work.

9.2 Preparation For The Journey: Using Critical Accounting Literature

My journey in this thesis began at chapter two. A reason why it is labelled a propaedeutical chapter is that for a beginner an understanding of a wide range of perspectives about the problematic "knowledge claim" in the "doing of research" (of course, within critical accounting research) can be considered not only daunting but also arbitrary. As a process of self-reflective understanding, this thesis began by being located within alternative strategies generally known as critical studies in accounting research as distinct from the positivistic theories. By elaborating the critical accounting movement this thesis illuminates some of the characteristics and diversities of the critical accounting literature.

Chapter two then considers the rationality and ideology in the doing of critical accounting research. It is argued that this is necessary on two distinct and rather inseparable levels, that is the meta-theoretical and action-orientation theoretical levels. The chapter then examines how a consideration of the socio-theoretical rationality can be related to theorising accounting effects in the economic and social context. To facilitate this, Habermasian critical thought and theses were adopted. By using Habermas's framework, it not only enhanced the understanding of a broader concept of rationality, but also it was a step towards an understanding of the methodological roots and the theoretical underpinning that determine the choices of appropriate research approaches. A central focus that was advanced in chapter two is that organisational analysis should be seen as a primary agenda of research in accounting. After all, as indicated earlier, the roots of
meaningful, yet uncertain, social and political considerations of accounting are to be found within organisations. An implicit motivation of chapter two can also be seen as an initial "kick/jolt" in an endeavour to embark on a study of 'accounting-in-action' as well as to develop a framework in order to carry out research in such a context. Initially, at an action-orientation level, a central research question of the study was focussed on the following broad agenda: what, how and why accounting has become purposive, is being used and is to be used, including the means of so doing at a micro-organisational level?

In reviewing the critical accounting literature, it is also suggested that it is not only Burrell and Morgan's (1979) paradigm of social theory that can provide the necessary assumptions for perspective choices but, also, there is a need for a further understanding about the nature of context in choosing and formulating research approaches.

Chapter three began with the important notion that, in order to understand the doing of research, an awareness of the dichotomies between methodology and methods is necessary. As I selected a Habermasian critical theory approach for a propaedeutical understanding of such dichotomies as well as to develop a framework for the study, a further analysis of Habermas's methodological positions was carried out in chapter three. A central objective of chapter three was to examine how Habermasian methodological corollaries (if any) can be intertwined with methods in the doing of research on accounting-in-action.

The thesis established that Habermas has neither talked about any specific accounting, nor provided any methodical structure of how to investigate a context of accounting. Despite doubts about Habermas's programme and its profound implications for accounting (see Arrington and Puxty 1991), consideration of his notion of 'emancipatory interest' (only) at the methodological level, can be seen as a potential methodological advancement in making sense of the doing of research on accounting-in-action. It is argued that it is either to perform practical discourse or for pre-theoretical preparation that a social scientist (external researcher) needs to collect a body of knowledge (both the "technical" - work
systems, purposive rational action, machines, inscriptions, etc and "practical" - understanding communicative action and meanings) through field study (or otherwise). Then, after gathering the "empirics" (both the technical and practical knowledge types), the final task of a social scientist is to represent them (empirics) to the public by way of emancipatory discourse. This is from the viewpoint of an external researcher, what I referred to as, an "emancipatory interest". This is an initial step which motivated me to select and obtain a suitable access to a micro-organisation in which an investigation of contemporary practice of management accounting (or otherwise) could be carried out.

9.3 The Journey Begins: Critical Ethnography as a Travelling Companion

As a 'reflexive process' (cf Ashmore et al, 1989), after obtaining access to the micro organisation (ie, BHP-SPPD) I ended up investigating the fact-building processes of a project (which I called the quasi-laboratory) which was initially involved in developing cost management systems on a stand alone basis at the researched organisation. At the time, I was unclear on many points. For example, knowledge for whom? Knowledge for what? Would my study be a case study or field study or something else? Even more so, a serious question to me was how could I represent the collected empirics? Chapter four is an attempt to develop an understanding about such riddles in researching accounting-in-action.

Chapter four begins by questioning whether 'field study' can be used as a common banner in organisational research. In so doing, the thesis notes that there exist various labels to refer to 'field study' such as 'field work', 'qualitative method', 'interpretive method', 'case study', and 'ethnography'. A consideration of 'ethnography' as a methodical discretion for field research is also acknowledged. It is also revealed that there is a wide range of interpretive research which relies on 'ethnography' and is based on differing theoretical perspectives. Thus, despite entering and solving various riddles of 'methodical discretion' such as 'ethnography', chapter four attempted to draw attention to some of the recent non-positivistic traditions of 'ethnographic' writings and their theoretical approaches with special
reference to the work of Bruno Latour and his colleagues (Latour 1987, Callon et al, 1986),
which is known as critical ethnography. Not only is attention focussed on revealing
rhetoric, language sets and principles as advanced by Latour (1987) and that of his
colleagues (Callon 1986) who investigate science in the making instead of ready made
science, but also on the usefulness and potential *eclecticism* of such a framework in
accounting-in-action research.

9.4 The Journey: BHP-SPPD

After spending more than a year in the quasi-laboratory I began to think of how I could
collate the empirics which I had collected and observed. Accordingly, in chapter five, three
major organisations engaged in the 'fact-building' processes for developing and
implementing cost management and other systems of the researched organisation (ie, BHP-
SPPD) through the "quasi-laboratory" (Phoenix 21) were introduced. The names of these
organisations are: BHP-SPPD, BHP-IT and SAP AG International, Australia.

The ethnography of chapter six presents an historical background of the development
of cost management systems (CMS) at BHP-SPPD since 1978 when, for the first time,
SPPD moved into a Mainframe CMS for its internal data processing and management
reporting purposes. It was not until 1989, however, that a complete review of the existing
costing systems was conducted jointly by SPPD and the PA Consulting group.

Some major findings in chapter six were as follows.

- Although SPPD's understanding about CMS reinforces and focuses on many
  'constitutive roles' such as the fulfilment of strategic, operational and financial
  information requirements, an immediate concern of the CMS development was
  focused on the development of 'technologies', that is, computer systems for internal
  data processing, including the costing systems.

- One of the main features of SPPD's existing costing systems (DISC and other
  systems) is that they were designed on the principle of a series of "feeder systems"
  each performing their own individual functions, supplying data to a common data
pool accessible for different purposes by a range of costing and related systems. This has been examined in section 6.3.1

- Along with the developments of "technologies" (computer systems for data processing) there were various changes in costing concepts and principles at SPPD over the years such as the change from the *period and variable* cost concept to the *direct and non-direct* concept.

- In an integrated mainframe environment it is essential to establish a cost management structure through specifying differing types of cost centre numbering systems. These numbering systems provide identifiers and a systematic way of arranging the organisation's business processes and activities at all levels. That is, by grouping various activities in a hierarchical order access to the information on a real time basis can be made possible, which can be seen as what Latour (1987) advocates as a "centre of calculation".

- An important incorporation into the CMS matrix at SPPD was the Planned Value Control (PVC) concept in 1986. This development was examined in section 6.3.2.

Moreover, chapter six also addresses various initiatives in terms of systems development, programs and projects by SPPD and its corporate BHP-Steel group in order to improve their CMS practice.

Insights gained from a study of historical background can provide the impetus for understanding the emergence of change and why possibilities for change (such as new technological possibilities etc) emerge. At SPPD, it was from the costing system review in 1989 that there emerged the possibilities for replacing the old "technologies" (DISC and other systems) at SPPD. It was from that point in time that the initial "jolt/kick" (Laughlin 1991) to form the "quasi-laboratory" began. The earlier sections of chapter seven examined the processes and events prior to and including the formation of this quasi-laboratory. An important focus of one of these sections was to emphasise the findings that were extracted from the report of a visit to several world-class companies in the UK and USA by a team from SPPD. From the findings it is demonstrated that today's cost management practice has not only been focusing on the 'constitutive roles' of managing cost management and other business activities of an organisation but also on the technological incapacity to achieve
effectiveness. It displayed how the 'commercial-in-confidence' (a team of the researched organisation) had evaluated the SAP system when replacing the existing data processing technology. The ethnography of this section also showed how the task of tendering and evaluating for such a technological possibility was carried out by the initial fabricators at SPPD.

The later sections of chapter seven examined the initial fabrication processes of the quasi-laboratory covering the period March 1991 to June 1992 when a trial for implementing the stand alone CMS using the SAP system was undertaken at the researched organisation. The ethnography of these later sections also displayed various processes of fabricating the stand alone cost management system at BHP-SPPD using the SAP system. It was established that fabrication began in the conversations of individuals, in working parties, in meetings restricted to small groups, and in consultations with various professional consultancies and the supplier of software (the SAP AG Ltd). Moreover, there were various phases of fabrications such as the 'conceptual design phase', the 'functional design phase' and the 'detailed design phase'. The ethnography of these later sections also displayed the rhetoric of fortifying, staging and framing the strategic concerns of the fabrication of cost management and other systems by the initial fabricators (ie, finance and planning) at SPPD.

The ethnography of chapter seven also was authenticated by incorporating differing opinions of the fact-builders (project members and others) as to why the stand alone cost management project did not succeed. In contrast to these views, the thesis concludes that nothing had gone wrong with the stand alone cost management development at SPPD, rather, it was getting stronger day by day as more enrolments of actors (both human and non-human) were taking place in the quasi-laboratory. The fate of the stand alone cost management system development became doubtful as it progressed because of the expense of developing interfaces within various sub-systems. This led to calls for a new beginning and the development of an Integrated Business System (IBS) by stopping or re-directing the
stand alone CMS project. The ethnography of chapter eight shows some of the stories and the rhetoric of such a fabrication of the IBS using the SAP system.

Latour (1987) argues that “there is no way of tying together interested groups (people) unless things are tied with them”. Following this argument, the analogy is advanced that an organisation’s internal control system is no more than a mechanism for tying together people (employees) within and across various functional areas with "things" (namely, operations, machines, and inscriptions). Following this simple analogy, chapter eight examines in some detail both (a) "machinations" and "inscriptions" (Latour 1987) and (b) the convincing arguments for people and change management issues involved in fabricating the cost management and other systems via the quasi-laboratory.

In particular, the ethnography of section 8.2 displays some of the "machinations" and "inscriptions" involved in fabricating the cost management and other systems at SPPD using the SAP system. Not only does this ethnography focus on a new structure, plans and scope of the quasi-laboratory (Phoenix 21 project) but also addresses multiple happenings of fabricating IBS via three different phases, namely the 'requirement definitions' (RD) phase, the 'functional design' phase and the 'detailed design' phase. It is suggested that there is an enormous amount of "machinations and inscriptions" required in order to develop and build information system technology. Various "language sets" or vocabularies that would impact on the future lifeworld of accountants at SPPD and elsewhere are also revealed.

The "machinations and inscriptions" required for the design of a technology can only be seen a part of the fabrication process. There are people and change management issues. Section 8.3 has addressed some convincing arguments for such issues involving the implementation of IBS at SPPD. The findings of this section can be interpreted in many ways. As I see it, change management is essential in any fabrication, which is not only contextual but also depends on the nature and level of change. This section also advanced some behavioural issues which seem to be looming or are imagined to be possible ones after
the proposed system implementation of the IBS at SPPD. For example, the 'ownership of information' can be seen as something like the sources of power in managing information systems and hence the management control system (MCS) of an organisation. Also, it was established that the use of a particular technology, such as the SAP system, and its differing use of hierarchical segments for integrating the sub-systems can give rise to conflicts amongst various occupational groups, after the implementation of the proposed system at SPPD. It is suggested that there is a need for allowing enough time to manage and communicate the changes of terminologies due to the proposed system implementation. Moreover, understanding personalities, restructuring the jobs, rearranging the relationships and designing accountability amongst the interested groups were also seen as important considerations for successful implementation of cost management and other systems at SPPD.

Finally, chapter eight has addressed some possible future roles for accountants at SPPD. These are:

1. Accountants will have to become business process analysts.
2. Accountants involved with process improvement at all levels.
3. In an IBS environment there will be less number crunching for accountants. Rather, they will be doing more analysis and reporting types of work.
4. Accounting is moving to the two extreme points, that is, to users' desk or input desk and to the centrally controlled offices.
5. Accountants need to have multi-disciplinary knowledge with a cross-functional focus such as assets management, maintenance management, sales and marketing, supply and warehousing, and production operations. Because, the process of deriving the plans necessitates cross-functional communications and commitments.
6. Accountants need a change in attitude to manage cost management systems on a real time basis.
7. Accountants will have more direct control in activity inputs or business processes.
8. Some accountants will become (information) systems' administrators.
9. There is a greater scope for change to open up new opportunities for managing cost management and other systems in an IBS environment than in the financial accounting as far as data processing and the integration side of it is concerned, of course, in a SAP system environment.
9.5 Concluding the Journey

Above all, the fabrication of cost management and other systems at BHP-SPPD via the Phoenix 21 project (ie, the quasi-laboratory) has not emerged as a ready made science. 'Instead, it emerged through a long process of fabrication by a network of enrolled fact-builders and softwares' (Chua 1993). In addition, every aspect of the fact-building processes whether it is an issue of "machinations or inscriptions" or of people is a constitutive practice. Where "the fate of facts [science] and machine [technology] is in later users' hands; their qualities are thus a consequence, not a cause, of a collective action" (Latour, 1987, p259).

At the researched organisation (BHP-SPPD) the initiative for fabricating this IBS was started in early 1990. As indicated in chapter four, the final cut-off date of my involvement in the quasi-laboratory (ie, the Phoenix 21 project) was October 1993, which at the time was an on-going project and was endorsed to 'go live' on 1 July 1994. At the time, the project members (fact-builders) were entering into another phase which they called the detailed design phase. Also, at the time they were heavily engaged in the training the users. The question remains as to when such an investigation process into the quasi-laboratory can be considered 'enough'. In this respect we can support Latour (1987, p7) who advanced an analogy "when enough is never enough" - that is, science does not yet know what should be considered as the discovery of facts and technology. It is rather socially constructed.
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BHP - Factsheets 1992

BHP - SPPD Draft Papers of the Conceptual design of the stand alone CMS project

BHP - SPPD List of draft functional design papers of the stand alone CMS project
   Draft paper on RF-S General Ledger system
   Draft paper on RK-A Job Costing
   Draft paper on Labor Costing system
   Draft paper on RK-S Budgeting System
   Draft paper on Stock/Materials system
   Draft paper on BARS (BHP's Accounting and Reporting systems) Interface system

BHP - SPPD List of draft papers of the Requirement Definitions Phase of the IBS project
   Draft paper on the Requirement Definitions on Labor Costing
   Draft paper on the Requirement Definitions on General Ledger
   Draft paper on the Requirement Definitions on Cost Centre Accounting
   Draft paper on the Requirement Definitions on Process Costing
   Draft paper on the Requirement Definitions on Plant Maintenance
   Draft paper on the Requirement Definitions on Supply and Services
   Draft paper on the Requirement Definitions on Engineering
   Draft paper on the Requirement Definitions on Assets Accounting
   Draft paper on the Requirement Definitions on BARS (BHP's Accounting and Reporting Systems) Information Systems
   Draft paper on the Requirement Definitions on Human Resources Management

BHP - SPPD List of draft papers of the functional design papers of the IBS Project
   Draft paper on the Functional Design on Labor Costing
   Draft paper on the Functional Design on General Ledger
   Draft paper on the Functional Design on Cost Centre Accounting
   Draft paper on the Functional Design on Plant Maintenance
   Draft paper on the Functional Design on Supply and Services
   Draft paper on the Functional Design on Engineering
   Draft paper on the Functional Design on Assets Accounting
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RK System: Description of Functions, Cost Accounting, Release date 02/01/1990

RA System: Functions Description, Fixed Assets Accounting, Release date 03/01/1987

RM System: Description of Functions, Production Planning and Control, Purchasing, Material Management, Invoice verification and Plant Maintenance, Release date 02/01/90


SAP Systems Documents:


RF system: User Documentation, G 04.2, Vol 2, Release 4.3, Date 10/1/89

Quick Reference Card RF Application Chart. Release: 4.3, date 01/01/89

RK Quick Reference Card 4.3 date 2/1/91

RM Quick Reference Card Release 5.0 June 1992


SAP's Training folds

RF 010 system - Organisational element 1

RK 110 and RK 112 training fold on Job Order Accounting and Settlement

RK 20 and RK 30 training fold on Cost Centre Accounting

RM 002 and RM 001RM system training fold on Material and Plant Maintenance

RK 001 training fold on Overview and Integration
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### Appendix 1A  
**Management Structure at SPPD**

#### 1. AGM Iron Making

**a. Coal Preparation Manager**
- **Superintendent Coal Handling**
  - Middling Disposal Lorries
  - Raw Coal Pits
  - Coal Blending
- **Superintendent Coal Washery**
  - Coal cleaning

**b. Coke Oven Manager**
- **Superintendents Coke Ovens Batteries**
  - Coke Handling
  - Coke Making 4 & % Battery
  - Coke Making 6 Battery
  - Coke making 7A Battery
  - Fume Suppression 7A Battery
  - Coke Making 3A Battery
- **Superintendent By-Products**
  - General By products
  - BTX
  - Sulphate of Ammonia

**c. Ore Preparation Manager**
- **Superintendent Raw Materials Handling**
  - Coke & Coil Handling
  - Superintendent RMH
  - Secondary Ore Handling
  - Primary Ore Handling
  - Tertiary Crushing Plant
- **Superintendent Sinter Plant**
  - Dewatering Plant
  - Sinter Station

**d. Blast Furnace Manager**
- **Superintendent Blast Furnace Projects**
  - Blast Furnace General
  - Blast Furnace Torpedo Cars
  - Works Despatch - Flat Iron
- **Superintendent No 2 Blast Furnace**
  - No 2 Blast Furnace Variable
  - No 2 B. Fur. Stocking & Charging
  - No 2 Blast Furnace Hot Blast System
  - No 2 Blast Furnace Top
  - No 2 Blast Furnace Proper
  - No 2 Blast Furnace Cooling System
  - No 2 Blast Furnace Casthouse Floor
  - No 2 Blast Furnace Gas System
- **Superintendent No 3 Blast Furnace**
  - No 3 Blast Furnace Variable
  - No 3 B. Furn. Stocking & Charging
  - No 3 Blast Furnace Hot Blast System
  - No 3 Blast Furnace Top
  - No 3 Blast Furnace Proper
  - No 3 Blast Furnace Cooling System
  - No 3 Blast Furnace Casthouse Floor
  - No 3 Blast Furnace Gas System
- **Superintendent No 4 Blast Furnace**
  - No 4 Blast Furnace Variable
  - No 4 B. Furnace Stocking & Charging
  - No 4 Blast Furnace Hot Blast System
  - No 4 Blast Furnace Top
  - No 4 Blast Furnace Proper
  - No 4 Blast Furnace Cooling System
  - No 4 Blast Furnace Casthouse Floor
  - No 4 Blast Furnace Gas System
- **Superintendent No 5 Blast Furnace**
  - No 5 Blast Furnace Variable
  - No 5 B. Furnace Stocking & Charging
  - No 5 Blast Furnace Hot Blast System
  - No 5 Blast Furnace Top
  - No 5 Blast Furnace Proper
  - No 5 Blast Furnace Cooling System
  - No 5 Blast Furnace Casthouse Floor
  - No 5 Blast Furnace Gas System

**e. Superintendent Tech & Dev Iron Making**
- Coke & Coal Technology & Development
- **Superintendent Tech & Development**
  - Raw material Investigation
  - Ironmaking Technology & Development

**f. Superintendent Maintenance Tech & Dev**
- Superintendent Maint. Tech & Dev
  - CME Ironmaking

**g. Superintendent Human Res. Iron Making**

#### 2. AGM Slab, Plate & Strip Products

**a. Planning & Development manager**
- EO Slab Plate & Strip Production

**b. Chief Maintenance Engineer SP&S**
- Maintenance Technology Support
  - BOS and Caster Electrical Service Shop
  - Slab Caster mechanical Workshop
  - Superintendent maintenance Repairs
  - Maintenance Technology Administration

**c. Manager Production Planning**
- Manager production Planning (Two)
  - Project Coordinator Prod Sys. & Support
  - Superintendent Production Control
  - Production Planning - Hot Rolled

**Superintendent Slab Yard**
- Caster Storage Area
### Management Structure at SPPD

**Appendix 1A**  

<table>
<thead>
<tr>
<th>Processing Area</th>
<th>Superintendent Slab processing Operations</th>
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</thead>
<tbody>
<tr>
<td>Slab Storage and External despatch</td>
<td>Water Cooling Route</td>
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<tr>
<td>Feed Assembly</td>
<td>Hot Despatch Route</td>
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<tr>
<td><strong>d. Manager Technology</strong></td>
<td>Air Cooling Route</td>
</tr>
<tr>
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<td>Slab Quality &amp; Despatch</td>
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<tr>
<td>Superin. Steel making Tech &amp; Dev</td>
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<tr>
<td><strong>Superintendent Tech. Plate &amp; Strip Mill</strong></td>
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<tr>
<td>Roll Metallurgy</td>
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<tr>
<td>Plate &amp; Strip Technology</td>
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<td><strong>Superintendent Metallurgical Services</strong></td>
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<tr>
<td>Mechanical Testing</td>
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<td>Central Laboratory Building</td>
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<td><strong>Superintendent metallurgical technology -</strong></td>
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<tr>
<td><strong>Superintendent Chemical laboratories</strong></td>
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<tr>
<td>Chemical Lab - Water Analysis</td>
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<td>Chemical Lab - Raw Materials</td>
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<td>Chemical Lab - Iron &amp; Steel</td>
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<tr>
<td>Superintendent BOS</td>
<td>Hot Stacking</td>
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<td><strong>Superintendent BOS Furnace Operations</strong></td>
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<td>No 2 Open Hearth RM Building</td>
<td>Heavy Plate Area</td>
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<td>Steel making Process Control</td>
<td>Guillotine Shearline</td>
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<td>VDG</td>
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<td>CAS-OB</td>
<td>Plate Despatch</td>
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<td>BOS Lime Burning</td>
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<td>Scrap Processing</td>
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<td>Flat Iron Processing</td>
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<td><strong>Superintendent Refractory Services</strong></td>
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<td>Refractory Services &amp; Technology</td>
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<td><strong>f. Slab Caster manager</strong></td>
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<td>Superintendent Caster process Control</td>
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<td><strong>Superintendent Casting Operations</strong></td>
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<tr>
<td>No 1 Caster machines</td>
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<td>No 2 Caster Machines</td>
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<tr>
<td>No 3 caster machines</td>
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<tr>
<td><strong>Superintendent Service Operations</strong></td>
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<tr>
<td>Tundish Service Operations</td>
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<tr>
<td><strong>g. Plate Mill Manager</strong></td>
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<td>Administration</td>
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<td><strong>Superintendent Plate Process Technology</strong></td>
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<td>Reheat Furnaces</td>
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<td>Edger - Stand 1</td>
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<td>Edger - stand 2</td>
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<td>Hot Leveller</td>
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<td>Plate Operations</td>
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<tr>
<td>Plate Mill &amp; Hot Strip Mill Descalers</td>
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<td><strong>Superintendent Plate Processing operations</strong></td>
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<td><strong>h. Hot Strip mill Manager</strong></td>
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<td>Superintendent Hot Strip Mill Roll Shop</td>
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<td><strong>Superintendent Hot Strip Mill Operations</strong></td>
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<td>Walking Beam Fce, Descaler &amp; Roughing</td>
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<td>Coil Box</td>
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<td>Crop Shear, des, Fin. Mill to weigh M/C</td>
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<td><strong>Superintendent Hot Coil Process &amp; Despatch</strong></td>
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<td>HCPD Cranes</td>
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<tr>
<td>Skin Pass Mill - Operation</td>
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<tr>
<td>Skin Pass Mill - Coil Prep &amp; Strapping</td>
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<td>HCPL</td>
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<td>Handling &amp; Packaging</td>
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<td>Custom process Slitting &amp; Shearing</td>
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<tr>
<td>Despatch HCPD</td>
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<tr>
<td>Custom processing - primary Slitting</td>
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</tr>
</tbody>
</table>
Appendix 1A
Management Structure at SPPD

3. Manager Tin Mill Products

a. CME Tin Mill Products
   Tin Mill Repair shop
   CME Tin Mill Products
   Tin Mill Process Support

b. Technology Manager TMP
   Quality Control - Tinplate
   Chief Development Officer Packaging TMP
   Tinplate Development

c. Marketing Manager TMP
   Environment Manager Packaging
   National Sales Manager TMP
   Product Mgr. Consumer. Packaging
   Product Manager General Line
   Product Manager Strapping
   Recycle Manager TMP
   Export Manager TMP

d. Tin Mill Operations manager
   TM Labour Gang
   Superintendent Preparation Operations
      Cleaning or Annealing Lines
      Temper Mill & Roll Shop Cranes
      Pickle Line - Activities 1-4
      Pickle Line - Snakepit
      Pickle Line - Activities 6-10
      Pickle Line Side Trim Shears
      Pickle Line - Activities 12 plus 13
      Cold Mill
      Cleaning Line
      Batch Annealing
      Continuous Annealing
      No 2 Temper Mill
      Custom Processing Pickling
      Custom Processing - Cold Rolling
      Custom Process - Batch Annealing

Superintendent & Despatch Operations
   TMP Production Planning
   NCR Cranes
   Tinplate Warehouse & Despatch
   Works Despatch NCRP
   Custom Processing Steel Strapping
   Cust Processing Hot Dip
   Galvanising

3. Manager Tin Mill Products

a. CME Tin Mill Products
   Tin Mill Repair shop
   CME Tin Mill Products
   Tin Mill Process Support

b. Technology Manager TMP
   Quality Control - Tinplate
   Chief Development Officer Packaging TMP
   Tinplate Development

c. Marketing Manager TMP
   Environment Manager Packaging
   National Sales Manager TMP
   Product Mgr. Consumer. Packaging
   Product Manager General Line
   Product Manager Strapping
   Recycle Manager TMP
   Export Manager TMP

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   TM Labour Gang
   Superintendent Preparation Operations
      Cleaning or Annealing Lines
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      Pickle Line - Activities 1-4
      Pickle Line - Snakepit
      Pickle Line - Activities 6-10
      Pickle Line Side Trim Shears
      Pickle Line - Activities 12 plus 13
      Cold Mill
      Cleaning Line
      Batch Annealing
      Continuous Annealing
      No 2 Temper Mill
      Custom Processing Pickling
      Custom Processing - Cold Rolling
      Custom Process - Batch Annealing

Superintendent & Despatch Operations
   TMP Production Planning
   NCR Cranes
   Tinplate Warehouse & Despatch
   Works Despatch NCRP
   Custom Processing Steel Strapping
   Cust Processing Hot Dip
   Galvanising

Pipe Feed Slit Line
NCR Slitting
NCR Wrapping
No 3 Slitting Line
Strap Line Processing - Super
Strap Line Processing - Standard
Jumbo Rewind Line
Steel Strapping Slitter - N/C
Strap Line Process - Super N/C
Strap Line Process - Std N/C
Steel Strap Rewinder N/C

Superintendent & Shearing Operations
   ET Lines Effluent Treatment P/T
   No 1 S/L, CPL and Rubber Roll Shop
   Coil Preparation
   No 1 ET
   No 2 ET
   Wide Coil Packaging
   Shearlines
   Shearline Assorting & Packaging
   Assorting & Salvage
   Packaging Assorted Tinplate
   Custom Processing Shearing

4. AGM Service Operations

a. Superintendent Resources - Service OPS
   HR Service Operations

b. Manager Supply
   Transport Services Manager
      Superintendent Bulk Transport
      Yards Roads Drains
      Transport Service Manager

   Supt. Product Despatch & Community Cartage
      Works Despatch - General

   Principal Officer Transport Administration
      Works Garage
      Weighbridge

Superintendent Rail Operations
   Railway Maintenance
   Rail Operations

   Principal Officer Raw Materials Transport
      OBD
      Raw Material Transport No 1
      Refuse Disposal
      Raw Material Transport No 2
### Appendix 1A  Management Structure at SPPD

<table>
<thead>
<tr>
<th>Title</th>
<th>Details</th>
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<tbody>
<tr>
<td><strong>Principal Officer Mobile equipment</strong></td>
<td>First Year Apprentice Training</td>
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<td>Multi-Skill Training</td>
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<td>Trades Training</td>
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<td><strong>Superintendent Electrical Services</strong></td>
<td>Electrical Shop</td>
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<td></td>
<td>Instrument Shop</td>
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<td>Auto Exchange &amp; Telephone. Linesmen</td>
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<td></td>
<td>Power Linesmen</td>
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<td>Electrical - Inspectors</td>
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<td>Digital &amp; Computer Systems</td>
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<td><strong>Construction Superintendents</strong></td>
<td>Electrical Construction</td>
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<td>Construction Mechanical &amp; Civil</td>
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<td><strong>Superintendent Foundries</strong></td>
<td>Pattern Shop</td>
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<td>Special Process</td>
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<td>Foundry Dressing</td>
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<td>Jobbing Steel Foundry - C&amp;M</td>
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<td>Brass Foundry - C&amp;M</td>
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<td></td>
<td>Jobbing Steel Foundry - Metal</td>
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<tr>
<td><strong>Superintendent Manufacturing Services &amp; Mech.</strong></td>
<td>Fabricating Shop</td>
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<td>Tube Bending Shop</td>
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<td>No 1 Machine Shop - Steel haven</td>
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<td><strong>Superintendent Services</strong></td>
<td>Plumbors</td>
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<td>Carpenters</td>
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<td>Painters</td>
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<td><strong>Manager Manufacturing Services</strong></td>
<td>Diesel Loco Shop</td>
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<td>Electrical Service Shop</td>
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<td>Garage Maintenance Shop</td>
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<td><strong>Management Accountant Energy Services</strong></td>
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<td>Superintendent Energy Management</td>
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<tr>
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<td>Compressed CO Gas</td>
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<tr>
<td><strong>Superintendent Utilities Maintenance</strong></td>
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### Management Structure at SPPD

<table>
<thead>
<tr>
<th>Role/Title</th>
<th>Details</th>
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<tr>
<td>Principal Officer Mobile equipment</td>
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<td>Bulk Transport</td>
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<td>Wagon Shop</td>
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<td>Loco Cranes</td>
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<td>Waste Material Disposal</td>
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<td>21 Area Management</td>
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<td>Mobile Equipment Administration</td>
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<td>Project Manager Associated Products</td>
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<td>Market Manager By-Products</td>
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<td>Superintendent Material Supply</td>
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<td>Material Supply</td>
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<td>Superintendent Contract &amp; Material Control</td>
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<td>Supt. Contract &amp; Material Control</td>
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<td>Printing Services</td>
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<td>Spares Control</td>
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<td>Senior Supervisor Supply Services</td>
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<td>Supply Services</td>
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<td>Crane Engineers</td>
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<td>Superintendent Mfc. Services Training</td>
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</tbody>
</table>

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**Note:** The table above outlines the management structure at SPPD, a company involved in various aspects of industrial operations, from mobile equipment management to construction services, electrical services, foundries, and manufacturing services. Each role and department is listed with its associated responsibilities, providing a comprehensive view of the organizational structure.
## Appendix 1A  Management Structure at SPPD

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<thead>
<tr>
<th>Superintendent Cryogenic Plants &amp; Services</th>
<th>Oxygen Plant</th>
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<td>Superintendent Utilities Operations</td>
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<td>Power Control</td>
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<tr>
<td>No 1 Power House</td>
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<tr>
<td>No 2 Blower Station Boilers</td>
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<tr>
<td>No 25 Boiler</td>
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<td>No 2 Blower Station Feed Plant</td>
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<td>Electricity Pool Expenses</td>
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<td>Electric Power Generation</td>
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<td>Primary Salt Water</td>
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<td>Secondary Salt Water</td>
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<td>Air Compressors</td>
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<td>B.Furn. Blowing Engines No 1 Plant</td>
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<td>Superintendent Utilities Operations</td>
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<tr>
<td>De-mineralising Plant</td>
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### 5. AGM Engineering

**AGM Engineering**
- Process Engineering
- P/T Engineering Maintenance
- Superintendent HR Resources

**a. Chief Engineer Plant Engineering**
- P/T Engineering
- Belt Reclalm
- CME

**b. Environment Manager**
- Environment
- Engineers' Building
- Lawns & Gardens

**c. Chief Engineer Engineering Technology**
- Hydraulics & Lub
- Engineering Technology
- Records
- Engineering Technology Mgmt
- Central Library

**d. Manager Maintenance Services**
- Maintenance Services

### 6. Manager Finance & Planning

**a. Payroll Superintendent**
- Payroll Preparation

**b. Superintendent Finance Administration**
- Superintendent Administration
- Commercial Building
- Donations
- Postage & Telegram

**c. Financial Accountant**
- Accounting Department - Finance
- Agency Fees
- Subscriptions
- EO Properties

**d. Senior Accountant Management Reporting**
- Management Reporting

**Cost Accountant**
- Accounting Department - Costs

**Accountant Marketing**
- Accountant Marketing

**e. Senior Accountant Financial Reporting**
- Cost Systems Review
- Financial Analysis

**f. Principal Solicitor**
- Legal Expenses

**g. Manager Business Planning**
- Manager Business Planning

**Superintendent IT Planning**
- Superintendent Business Planning

### 7. Manager Marketing Hot Rolled Products

**Marketing Product Manager**
- Market Manager Dist. Dire Customers
- Market Manager Dist & Dire Customers
- Market Manager International
- Market Manager Inter-divisional
## Management Structure at SPPD

### Product line & Technical Market
- Market Strategy & Plan Manager
- Manager Marketing - HRP
- Market Strategy & Dev. Manager
- Branch Operations

#### a. Market Manager Pipe & Tube
- Market manager Pipe & Tube

#### b. Customer Requirements Planning Mgr
- Customer Requirements

#### c. Sales Manager SPPD/LPD
- Branch Operations

### 8. Manager Human Resources
Manager Human Resources
Superintendent Human Resources Projects

#### a. Equal Opportunity Coordinator
- Equal Opportunity Coordinator

#### b. Superintendent Selection
- Selection Department

#### c. Supt. Human Resources Planning
- Arbitration

#### d. Public Affairs Manager
- Sponsorships
- Public Relations

#### e. Supt. Occup. Health Safety & Rehab
- Counselling Services

### Supt. Occup. Health safety & Rehabilitation
- Rehabilitation

#### Superintendent Compensation
- Compensation

#### Chief Occupational Health Physician
- Occupational Health Services

#### Safety Superintendent
- Safety

#### f. Supt. Remuneration & Management Services
- RAMS

#### g. Supt. Remuneration & Mgmt Services
- Superintendent Training & Development
- Warrawong Conference Centre
- Training Consultancy
- Open Learning Centre

### 9. TQC Manager
TQC Development Manager
- Superintendent Quality Assurance
- Chief TQC Development Officer
- Principal TQC Development Officer
- Process Analysis
- TQC Communications

### 10. Manager Organisational Development
Manager OD
Figure 5.5 SAP's R/3 System and Applications

(Source: SAP Management Report 1992)
Appendix ID

TRANSACTION CODES

Cost Center Maintenance
- TC01 Display Cost Center
- TC02 Change Cost Center
- TC03 Create Cost Center
- TC04 Display Cost Center Changes

Cost Center Planning, Cost Center Budgeting
- TC05 Display Activity Record
- TC06 Change Activity Record
- TC07 Activity Fast Entry
- TC08 Display Cost Center Plan
- TC10 Cost Center Planning
- TC11 Plan Revision
- TC12 Copy Complete Plan
- TC13 Display Budget
- TC14 Change Budget
- TC15 Create Budget
- TC16 Planning Simulation
- TC17 Copy Plan Version
- TC18 Batch Input for Cost Elements
- TC20 Reconcile Planning Activities
- TC21 Reconcile Cost Element
- TC22 Reconcile Planning
- TC23 Balance of Activities
- TC24 Calculate Basis for Non-measurable Activity
- TC25 Planned Price Iteration

Intra-company Cost Allocation
- TC30 Post Cost Accounting Document
- TC31 Actual Cost Distribution
- TC32 Actual Primary Cost Assessment
- TC33 Planned Cost Distribution
- TC34 Planned Primary Cost Assessment
- TC35 Allocation of Non-measurable Activity

Accruals Accounting (in the course of the year)
- TC51 Planned Accruals - Cost Center
- TC52 Planned Accruals - Company Level
- TC53 Actual Accruals - Cost Center
- TC54 Actual Accruals - Company Level

Cost Center Reports
- TC55 Cost Center Report with Comparison
- TC56 Cost Center Report
- TC57 Store Cost Center Area Report
- TC58 Display Cost Center Area File

Cost Element/Activity Report
- TC62 Cost Element/Activity Report
- TC63 Cost Element/Activity Report
- TC64 Activity Analysis
- TC65 Display Cost Element Entries
- TC66 Evaluate Features

Project Cost Estimate
- TC21 Display Project Cost Estimate
- TC22 Change Project Cost Estimate
- TC23 Create Project Cost Estimate

Project Budget Management
- TC30 Maintain Budget
- TC31 Display Budget
- TC32 Update Budget
- TC33 Create Budget
- TC34 Returns
- TC35 Transfers from Project to Project
- TC36 Even Budget History
- TC37 Display Budget History
- TC38 Budget Changes

Project Planning
- TC41 Project - Plan
- TC42 Project - Plan
- TC43 Project - Plan
- TC44 Display Cost Element Plan
- TC45 Time Scheduling

Project Reports
- TC45 Project Report Overview
- TC46 Project Report Analysis
- TC47 Create Summary Report

Function Codes TK00
- ABH Display actual costs by cost center for one company code
- ABP Display planned costs by cost center for one company code
- ACH Display actual costs by cost element for one cost center
- APF Display planned costs by cost element for one cost center
- ACH Display actual usage per statistical activity
- APF Display planned usage per statistical activity
- AVS Display processing status of assessment/distributions/accurations
- AVF Display iteration matrix (primary processing)
- AXH Display cost element master information
- AXX Display KOLA records from cost center specified
- HTR Display run statistics

Status of Assessment/Distribution/Accurations with Function Code AVS
- S Processing has been started
- R Result has been completed (assessment distribution or completion)
- B At least one posting has been made
- E Processing has been completed
- A At least one posting to accruals management order (accurations only)

Variance Calculation, Variance Allocation
- TK00 Calculate Variances
- TK04 Reverse Orders with Variances
- TK43 Post Order Overhead
- TK44 Display Cost Center Charging
- TK45 Change Cost Center Chargin
- TK47 Change Cost Center Charging

Orders
- TK01 Display Order
- TK02 Change Order
- TK03 Create Order
- TK04 Order Mass Processing
- TK05 Order Report
- TK06 Order Analysis (BAA)
- TK07 Allocate Changed Variances
- TK08 Job Order Cost Accounting
- TK09 Order Submissions
- TK05 Order Limitations

Costing
- TK89 Maintain Product Costing (PRK-E)
- TK78 Display Product Costing
- TK69 Costing Analysis
- TK88 Maintain Product Costing Tables
- TK82 Product Costing Selection

Preliminary Costing
- TK91 Display Preliminary Costing
- TK92 Change Preliminary Costing
- TK93 Enter Preliminary Costing

Operating Results Analysis
- TK81 Display Line Items
- TK82 Create Line Items
- TK83 Maintain Line Items
- TK84 Display Cost Center Actual Costs
- TK85 Display at Cost Center Plan Cost
- TK86 Display Planned Operating Thrills
- TK87 Cost Object Planning
- TK88 Hierarchy Planning
- TK97 Display Hierarchy Planning
- TK89 Display Hierarchy Planning
- TK91 Display Operating Results Report
- TK92 Display Operating Results Report based on Line Items
- TK93 Calculation of Variances

Other
- TK01 RK System Control

Projects
- TC01 Display Project
- TC02 Change Project
- TC03 Create Project
- TC04 Change Project (with document)
- TC05 Define Project
- TC06 Maintain Project Allocation
- TC07 Display Project Changes

Project Event Records
- TC11 Display Event Record
- TC12 Change Event Record
- TC13 Create Event Record
- TC14 Event Record List Entry

These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Parameters for Column Layout

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<th>Fixed Cost Totals</th>
<th>(alter TK40)</th>
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<td>Target costs</td>
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<td>Planned price variance</td>
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<tr>
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<td>Actual price variance</td>
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<tr>
<td>K6</td>
<td>Target usage variance</td>
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<tr>
<td>K7</td>
<td>Planned usage variance</td>
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<tr>
<td>K8</td>
<td>Actual usage variance</td>
</tr>
<tr>
<td>K9</td>
<td>Allocated usage variance</td>
</tr>
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</table>

<table>
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<th>(alter TK40)</th>
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<td>Actual usage variance</td>
</tr>
<tr>
<td>K9</td>
<td>Allocated usage variance</td>
</tr>
</tbody>
</table>

Function Codes TK40

- **TK40**: Determine the variance cost, cost difference, planned actual cost, fixed cost, and allocated cost.
- **TK41**: Submit the variance analysis.
- **TK42**: Display the variance analysis.
- **TK43**: Display the variance analysis for the project.

Function Codes TK66

- **TK66**: Display the variance cost and cost difference.
- **TK67**: Display the variance cost and cost difference.
- **TK70**: Display the variance cost and cost difference.

Parameters for Column Layout

- **Cost Type**
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  - **Internal Name**
  - **Internal Name**
  - **Internal Name**
  - **Internal Name**
  - **Internal Name**
  - **Internal Name**
  - **Internal Name**
  - **Internal Name**
  - **Internal Name**
  - **Internal Name**
  - **Internal Name**

Function Codes TK71

- **TK71**: Display the variance cost and cost difference.
- **TK72**: Display the variance cost and cost difference.
- **TK73**: Display the variance cost and cost difference.
- **TK74**: Display the variance cost and cost difference.
- **TK75**: Display the variance cost and cost difference.
- **TK76**: Display the variance cost and cost difference.

Function Codes TK67

- **TK67**: Display the variance cost and cost difference.
- **TK68**: Display the variance cost and cost difference.
- **TK69**: Display the variance cost and cost difference.
- **TK70**: Display the variance cost and cost difference.

Function Codes TK61

- **TK61**: Display the variance cost and cost difference.
- **TK62**: Display the variance cost and cost difference.
- **TK63**: Display the variance cost and cost difference.

Function Codes TK62

- **TK62**: Display the variance cost and cost difference.
- **TK63**: Display the variance cost and cost difference.
- **TK64**: Display the variance cost and cost difference.
- **TK65**: Display the variance cost and cost difference.
These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Appendix 2
Appendix 2 Visiting World Class Companies by the Commercial-in-
Confidence Team from BHP-SPPD: A Summary

As indicated in chapter seven, following a costing system review and having recognised inadequacies in the old costing system architectures, in May to June 1990 a group consisting of three CEO (two from BHP-SPPD and one from BHP-IT) visited ten world class companies in order to gain a greater understanding of the CMS practices. Of ten companies, they visited, four of them were in the UK and six were in the USA including a consulting firm.

The outcome of the visit was documented in a large report. An interesting aspect of summarising this work here is the recognition that the real actors (commercial-in-confidence) visited ten related world class companies in order to improve their "organisation of social life" or organisational practice of CMS. In other words, a world class company (the researched organisation) investigated its related competitors' CMS practices to improve their own practice.

The name of the companies which they have visited are not cited here for confidential reasons. The companies are named from A through J respectively to represent ten companies.

Company A

On Monday 21 May 1990 the team visited company A. The personnel they contacted during the visit included a controller, a cost management co-ordinator, manager accounting division and the Vice President of company A. Company A is engaged in producing powder metallurgy and tooling, specialising in cemented carbides, ceramics, powdered metals and other materials for machining, cutting, shaping and forming metals, coal, concrete and other substances. The team reported that company A had 12 plants in the USA and 8 plants outside the USA. Its principal raw materials are "carbides of tungsten containing titanium and cobalt". Annual sales at the time were $570 million, operating margin 15-16%, net profit $30 million and earnings to total capital were 11.5%. The company had 5 400 employees with 34% of its sales overseas.

The team reported that the strategic direction for company A was at the time focussed on global customers to be a provider of tools, tooling systems, supplies and services to the metal work industry. This had provided a basis for the activities they (company A) undertook and the success achieved during the years. The team further reported that one of their strategies at the time was to develop information systems to meet their needs throughout the 1990s providing better support for inventory management and improving integration for manufacturing systems and managing costs in a better way.

As a leader of their industry, company A was a very progressive company and was well advanced in the area of total cost management and activity based costing, as reported by the team. The impression the team had about the company was as follows:

TQC concepts have been a way of life in company A (emphasis added) for many years... The cover of company A's (emphasis added) 1989 annual report has the words, "Be daring, Be first, Be different", and the chairman's report includes the paragraph, "We're successful when we gain our objective to be the leader of our industry. We are that. We are a successful company, and we will continue to build on that success." (p8)
From the annual report of 1989, the team quoted the following two paragraphs in order to demonstrate the importance that had been emphasized by company A in respect to their cost management and management information system:

Another important activity this year was our strategic software program. Many of our software programs are over ten years old and do not meet our business requirements today. As a result, we have begun to make major upgrades in our business systems to better serve our global, customer-needs-driven strategy.

The redesign of our software will take about four years to complete and will use relational data base technology. In a relational data base, all connected systems access the same data base, with changes to the data being entered only once. This process results in greater efficiency and improved data integrity. Our strategy is to develop information systems to meet our needs throughout the 1990s, providing better support for inventory management, improving integration of CIM (Computer Integrated Manufacturing), and managing costs in new ways. (p8)

The team further reported:

The driving force behind the recognition for change was the Chief Executive Officer who committed himself and the organisation to critically review their cost management techniques and processes. The recognition for this review stemmed from the inability of the organisation to provide information on the profitability of its product lines by geographical location sales channels and type of product. Net operating profit included 45% of costs not assigned to product lines. (p9)

The team demonstrated in their report that by using the activity based costing (ABC) they (company A) assigned all the 45% unassigned operating costs to products. In addition, the team reported that the company had established several KPIs (Key Performance Indicators) for reporting and performance measurements. They were predominantly non-financial. The team also contended that with the development of KPIs company A placed an emphasis on forecasting future KPIs with improvement and actual performance against KPIs.

To compare these KPI concepts with SPPD’s PVC (Planned Value Control) concept the team stated the following:

KPIs are a vital ingredient for company A’s (emphasis added) Total Cost Management programme. There are 5-7 KPIs per level. KPIs are measured either on a daily or weekly basis, or whatever is appropriate. Targets are set and it is very much a planned driven exercise. There are charts on the wall recording progress and the concept has been accepted at all levels in the organisation. Work cell team members are allocated responsibility for measuring and recording specific KPIs and they discussed at their weekly
meeting. This is basically identical to our (SPPD's) Planned Value Control (PVC) concepts. (p11)

To highlight the management of KPIs for company A, the team reported the following:

Activity/cell groups were set up, i.e. a group of people focussed on one task where the inputs can be measured against the outputs of that one group. This group had a set of KPIs which were managed by what they call "functional advisory committees" headed up by a committee chairman who could be at the foreman level with the foreman's manager being part of the project team. One of their key successes in this area has been the support by management. A lot of work and commitment to change the culture involved sitting down with each group enabling them to understand their own needs and develop KPI to meet those needs. The Finance people acted as consultants... Functional managers are responsible for getting the data and reporting against it with the finance people providing an advisory role. Each department set and signed off on the KPIs which are monitored in some areas daily/weekly with scoreboards throughout the manufacturing plant (and other areas).

The team also reported that company A preferred a lateral reporting system against KPIs on a daily/weekly basis to the project groups rather than a formal pyramid reporting structure. The team found that at the time the company's financial reporting system was quite adequate but not their cost management system for operational and strategic information requirements. At the time, the company was in the process of transition of implementing a total cost management programme, which was as follows.

<table>
<thead>
<tr>
<th>Total Cost Management Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial System</td>
</tr>
</tbody>
</table>

- **General Ledger**
  - Budget Vs Act
  - Salaries
  - Wages
  - Depr.

- **Cost Accounting**
  - Inv Valuation
  - Std Cost
  - Var. Analysis
  - Std Vs Act.

- **Activity Analysis (CFA)**
  - Activity Based Costing
  - Activity Performance Measurement

- **Non Value Added Analysis**
  - Activity Driver Analysis
  - Cost Driver Analysis

- **Best Practices**
  - Product Line Management
  - Make Vs Buy Decisions
  - Logistics Management
  - Manufacturing Sourcing
  - Inventory Management
  - Investment Analysis
  - Pricing Strategy
  - Profitability Management
  - Value Chain Analysis

Sudhir C Lodh: PhD student, Department of Accountancy, The University of Wollongong, Australia. This summary report is strictly confidential and provided for examination purposes of this thesis only.
The team investigated the company's software development programs and systems architecture used for their integrated management control system. The team stated that at the time the company's software development programme was directed by the strategic system plan, which was prepared by an executive system planning committee. The company had put a considerable effort in developing this strategic systems plan. Regarding the systems architecture of company A, the team reported that

Feeder systems feed transaction information back to a transaction database which in turn feeds their MRP system and a database up for Activity Based Costing modelling.

The company (emphasis added) use a commercial integrated Mainframe package (MAC-PAC) for MRP and product costing; and a PC package (Net Prophet) to model Activity Based Costing.

IBM's DIS facility and EASYTRIEVE are used to provide data extracts from these two databases to plants PC.

Software tools have been provided in the PC environment to compose a "Product Manager's Workbench" which contains the database, spreadsheet, graphics and report writing packages needed for performance monitoring and reporting.

**Company B**

On 22 May 1990 the Commercial-in-Confidence team visited company B. The contact personnel in company B included 1) manager (Application Support & Systems Automation), 2) a supervisor (Corporate Reporting & Analysis), 3) director of Information & Automation, and 4) a consultant from a world class consulting firm. Company B is a major US integrated steel producer. Business lines of the company B included as reported by the team: carbon flat steel, special flat rolled steel (both electrical and stainless steel), fabricating and processing (carbon and sheet steel), bars, rods and wire products. At the time of the visit incorporated sales of company A were $1.6 billion and a net profit of about $88 million. The incorporated company's employees were 20 000. The team visited a plant of company B, which used to produce about 600 000 tonnes of electrical and stainless steel with 3 000 employees per annum.

In evaluating the management reporting practice of company B the team commented that:

As a result of falling volume and profitability, they recently took a review of their management reporting and found the following:

- More effort went into explanations of about accounting systems discrepancies rather than into improving operating performance.
- It was normally too late to take action.
Accounting systems could not eliminate the standard excuses for operating performance. Spent most of the time improving accounting systems.

Reports were not trusted.
They were looking backwards, not forwards.
Credibility with plant management was very low.

They began to address the problem by issuing some guiding principles:

- Focus on manufacturing measures.
- Make measures simple and measure true performance and trends towards company's goals.
- Provide performance measures on timely basis.
- Pricing and what/if analysis must reflect reality drawn from realistic cost drivers.
- Performance management systems will be jointly owned and maintained by all user departments.
- Change name from Cost Management to Performance Management to remove the dollar emphasis.

The team contended that at the time the company used cost information for fulfilling three major requirements such as financial accounting, operational management, strategic decision making. The team reported that:

They (company B) recognised the need for data accuracy and quality and took the approach of getting their systems to record the right information, standardise technical information, product tracking and scheduling throughout the plant before moving into cost management. They took the philosophy of working towards a fast one-system database as opposed to doing it manually. Also in their findings they identified people trying to manage on what they are inspected on rather than what is expected of them.

The philosophy indoctrinated in them was consistency of performance measures towards:

- **Company's goal** - Customers satisfaction
  - Measures - On time shipment

- **Requirement to** - Not over-book
  - Achieve good production scheduling performance
  - Measures - Bookings vs capacity
  - Stability of scheduling
  - % performance to schedule

- **Requirement to** - Improve unit availability
  - Improve yields
  - Measures - Delays
  - Rejects (p18)
It also reported that the company's operational people did not know how and when costs varied with changes in cost drivers. They pointed out that company B's monthly cost information could be misleading. The team further stated that the company had given a strong focus on developing non-financial KPIs.

By evaluating company B's maintenance management systems, the team commented that "in tackling their repairs and maintenance costs they identified a need for improvement in performance of the manufacturing shops, particularly backlogs, lead times, work ahead and in front of the shops and the slow response time to operational request". According to the team, the company's maintenance shops were not involved in any capacity planning rather it was process focussed. Individual shops were doing their own planning and scheduling. At the time of the visit, company B was involved in planning and designing a new Maintenance management system, the future direction of which was focussed on the utilisation of "cell" concept practicing master planning/scheduling integration through all shops, capacity planning and utilising an MRP package in the longer term. The team elaborated the concept as follows:

They (company B) commenced with product scheduling right from machine shop requirements through to any welding, fabricating requirements, etc. This enables them to move to a "cell" application. This involves setting up a "cell" which is a shop within the manufacturing shops where a caster roll can be machined/repaired, in one area, that is not moved from shop to shop. They have moved all required equipment into the "cell" as well as the various crafts. Work applicable for the "cell" was repair work and major items were a high percentage of their turnover. (p21)

Finally, the team contended that the company's "total maintenance cost control for the operations is predominantly done through an adherence to budget, with detail of what is causing costs including delay and failure analysis". The team further commented that at the time they (company B) were aiming to get into "predictive maintenance rather than reactive maintenance".

**Company C:**

After visiting two companies on 23 May 1990, the team had a discussion session with a world class accounting consulting firm (ie, company C) in order to enhance understanding of cost management practices of the steel industries in the USA. Three participants from company C were joined in the discussion: one from the Pittsburg office (USA) and two from the North Sydney office (Australia).

The team reported that the consultants had emphasised the 'cross functional analysis' through activity flow charting which could provide a useful tool for developing KPIs and hence the improvement of cost management system. In commenting on the US Steel industry the consultants put forward the following analogy, as noted by the team:

- Still reasoning away why they (US Steel industry) cannot meet delivery performance.
• Most Steel costing systems are cost centre focussed, relying on allocation, in some cases 30% of costs come from allocation, hence not judged as good systems.
• Cost management largely facility focussed rather than product, ie. allocate costs to cost centre then allocate to product.
• Product costing systems are still predominantly Mainframe but availability and accuracy of data is still questioned.

**Company D:**

On 23 May 1990 the Commercial-in Confidence team visited company D. The company is a subsidiary of a major steel group in USA. The corporate sales were approximately U$7 billion per annum with a net profit margin of approximately 4%. According to the team, company D at the time used to cover approximately 70% of its corporate sales. The major products that were produced by the company included hot and cold roll sheet and strip, coated flat rolled products and tabular goods. The production facilities was sourced from the group's various flat roll product plants.

From the visit the team discovered that organisational cost management system should facilitate the following three requirements: strategic, operational and financial information needs. For company D they (the team) viewed the following:

*Company D* (emphasis added) was the only company that did not have their financial systems firmly in place. The general feeling from most organisations with whom we had discussions, was that they had very good financial systems in place and the problem for many years has been that the financial systems have been used to drive all areas of cost management. Whilst organisations like company A (emphasis added) are now looking at the cost management from a strategic perspective and *company B* (emphasis added) and *company E* (emphasis added) from the operational perspective, (whereas) *company D* (emphasis added) were battling to establish financial systems. Part of this was due to the take-over activities the company has been caught in during the last few years. p30

At *company D* (emphasis added), everything is currently done by paper, there is no integration, there are problems with consistency of data.

At the same time as this development is proceeding, *company D* (emphasis added) is trying to implement a TQC programme. Large placards on the wall of the conference room stated the company's position in regards to mission, customer, people, continuous improvement, suppliers, leadership and the long term (objectives). Every organisation we spoke to had some form of TQC programme in place. The question we cannot answer is whether they were genuinely practicing TQC, or only saying the words. (p31)

The team contended that by using MACPAC (Adersen Consulting Computer Package) company D could focus on customer needs and priorities in manufacturing. "MACPAC has

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Sudhir C Lodh: PhD student, Department of Accountancy, The University of Wollongong, Australia. This summary report is strictly confidential and provided for examination purposes of this thesis only.
a general ledger/costing capability and the accounting/finance systems re-development would be brought along with the manufacturing process development." The team also contended that "the real time collection of data and updating of inventories would represent a major step forward and also go a long way to resolving some of the credibility issues currently surrounding the costing system". The team further reported that:

In many ways, company D's (emphasis added) costing system is very similar to our own DISC system. They, as with company B, had all the same problems with the costing system credibility that we have identified in our Cost System Review. A general concern is that monthly costing information at cost centre level is too late for the type of decision making superintendents/foremen need to make. Too much reliance is placed on financial figures rather than performance measures and TQC principles of management. (p32)

In evaluating the cost management and information systems that were practiced in company D, the team viewed that they (company D) were coming from the following positions:

- One of manual recording (receipt of orders through to invoicing on a non-mechanised basis);
- management system not focused on the right things, for example lead time, work-in-progress;
- difficult to change the mind set from man hours per tonne measurement to agreed key performance indicators;
- a perception at the operational level they need to know the actual cost per tonne and problems in coming to grips with synchronising production planning and scheduling;
- situations where production to schedule reports 150% with work-in-progress inventories building up and the unit downstream reporting only 30% because of the defects in the product produced from the upstream unit.

The team commented that, at the time, company D focussed on the following generic issues for improvement:

- Inadequate inventory control (multiple inventory system)
- lack of efficient planning/forecasting, lack of systems integration (redundant data entry)
- manual reporting information flow and poor services information by working back from the customer requirements through the manufacturing process in developing their systems.

Their plan of attack is in sequence of order entry, order planning and release, operational scheduling and control, order tracking, inventory control, billing and then flowing into cost information. (p33)
To establish "standards" for various business processes, as reported by the Comercial-in-Confidence team, company D formed various teams consisting of cross functional personnel such as schedulers, operators, planners and finance people. The team viewed that in company D "a common set of rules were used by both production/planning/scheduling and finance. Once the norm (standard) was established there was then the understanding that this was the benchmark against which improvement must be made". (p34)

In order to develop standards for business processes, the team reported that company D followed the following steps sequentially:

- Define Products
  - List products to be manufactured
  - Establish product families
  - Identify production standards (yield, routing)
- Define Processes
  - Define Work Centres
  - Define Cost Centres
- Define Input
  - Raw material requirement
  - Raw material costs

The team report viewed that in company D maintenance work primarily was carried out by the employees instead of outside contractors. There are three reasons for not using outside contractors. Firstly, it was difficult to get outside contractors. Secondly, they (contractors) are tied to the unions with their labour contracts. Thirdly, they (company D) find the administration problems of contractors to be burdensome.

In a general comment the team pin-pointed that in company D the cost information availability requires around third week of the month. They were "back from customer requirements, developing system to meet their requirements through using KPIs with improved customer focus and synchronised manufacturing with financial/costing following on." At the time, the company were using a MACPAC computer package for their cost management system.

**Company E:**

On Thursday 24 May 1990, the Commercial-in-Confidence team visited company E. They contacted two executive officers (the accounting manager for systems and the manager for cost accounting) and a consultant from Andersen Consulting.

Company E was a subsidiary of a major corporation which had (at the time of the visit) approximately 20,000 employees world wide and annual sales approximately U$2 billion. Company E had approximately 1,500 employees and annual sales of U$750 million and an operating profit of U$90 million, as was reported by the team.

Company E was the manufacturing and research arm of its corporate company. The team reported the following about company E's cost management practice:

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*Sudhir C Lodh: PhD student, Department of Accountancy, The University of Wollongong, Australia. This summary report is strictly confidential and provided for examination purposes of this thesis only.*
We were advised that company E (emphasis added) were serious about change, especially in the cost accounting/cost management area. But the change has been very slow despite all the systems' credibility issues similar to those we have identified at SPPD. They have traditionally operated a standard costing system. They have major concerns about their product costing and use of the information.

They attended many seminars and followed the recent trends in cost management. As a result of these seminars, and being able to adopt the attributes most suited for the needs of their business, they developed a PC prototype at one of their plants using activity based costing and cost management principles.

They have been extremely pleased by the results, the acceptance by plant operators and the desire by their production people to extend the prototype development further. They are currently taking the prototype principles and placing them into a Mainframe system to extend the concept throughout their division.

The team further reported that all logical activities for the manufacturing operations at company E were grouped together, relocated and reorganised to create work cells (rather than scheduling these through the traditional processes of cutting, fabricating, machining, etc). The team commented that the introduction of the "work cell" concept had resulted in better productivity, improved quality, reduced rejects and better management from having the activities being grouped together at work cell level. They also viewed that at company E the measurement of performance was undertaken more by way of key performance indicators than the traditional financial emphasis on cost reports.

To evaluate whether the "work cell" concept was applicable to BHP-SPPD (ie, the researched organisation) the team viewed that:

This approach to activity based costing may only have limited application within SPPD, ie. in Manufacturing Services, other services and workshops. However, many of the benefits achieved by the company E (emphasis added), and more particularly, the acceptance/ownership of the work cell and the obvious change in the behaviour/culture can be achieved at SPPD through "properly implemented" activity based costing.

They (the team) also vindicated some attributes of the "work cell" concept as follow.

- Treat the next process down the line as the customer.
- Warranty costs go back to the work cell.
- Daily performance indicators established for the following:
  Performance to schedule
  Quality
  Lead time
  Unplanned down time

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Some productivity measures

- The costing system and chart of accounts have been simplified. Although management of the work cell still receives some monthly cost information, the emphasis is on cost per hour and total cost of the cell. (p43)

A further elaboration of the Cost Management Systems (CMS) of company E by the team was as follows:

*Company E* (emphasis added) currently operates its cost management system through a main frame standard costing system. Concurrently they are using a PC based database package to develop a prototype cost control system which makes no distinction between direct and indirect costs, identifying plant, sub-plant and cell concepts activities within these. Each plant, sub-plant and cell is designated as a cost pool where costs are reported and can be controlled easier.

The need for change was identified from user survey results which identified weaknesses in the current cost management system. Surveys also identified what aspects of the cost management system would be beneficial to plant personnel in supporting manufacturing operations. In developing a new system they focused on how the current system related to the following areas: simplicity, cost control and, cost accountability and visibility.

These principles were used to develop a conceptual design for *company E* (emphasis added), that is the plant, sub-plant, cell concepts. Describing the structure, the plant would be equivalent to a total operating plant, the sub-plant would manufacture one component of the four components that make up the *product* (emphasis added) and the cells would be discrete activities in the manufacturing of a component. (p44)

At the time, company E were engaged in re-structuring their costing system. The existing costing system at company E grouped costs into the following: direct material standards, direct labour standards, direct departmental overheads, indirect departmental overheads. All the overheads were allocated on the basis of the budgeted overhead rate applied to standard dollars. This allowed expensive components to be manufactured on newer automatic machines requiring little labour, potentially allocated less indirect costs than cheaper components that are labour intensive. They also contended that the product lines, with actual costs close to standard, must bear a portion of the variance generated by the cost of products not close to standard. In overcoming this and other problems, at the time the company undertook a project to prototype these issues. The prototype model that was undertaken at the time at company E was described by the team, as follows:

In the proposed prototype model costs would be aligned to the products by dividing the plants into focused sub-plants and cells. Each plant, sub-plant and cell is designated as a cost pool where costs are reported and can be

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more easily controlled. The majority of costs are concentrated at the sub-plant and cell level. The following outlines the concept:

![Diagram showing the cost structure of a company]

<table>
<thead>
<tr>
<th>Plant (8% of costs)</th>
<th>Costs</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>- staff salaries</td>
</tr>
<tr>
<td></td>
<td>- Facilities Costs</td>
</tr>
<tr>
<td></td>
<td>- Operating costs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sub-Plants (3% of Costs)</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Supervisory</td>
</tr>
<tr>
<td></td>
<td>- Material handling</td>
</tr>
<tr>
<td></td>
<td>- Some rework</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cells</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- Direct labour</td>
</tr>
<tr>
<td></td>
<td>- Supplies</td>
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<tr>
<td></td>
<td>- Scrap</td>
</tr>
<tr>
<td></td>
<td>- Rework</td>
</tr>
<tr>
<td></td>
<td>- Depreciation</td>
</tr>
<tr>
<td></td>
<td>Total Costs = Cell Period Operating Costs</td>
</tr>
</tbody>
</table>

The costs under the above proposal for the company would be subdivided only into two primary cost categories such as material costs and conversion cost at the cell, sub-plant and plant level. The team further elaborated that:

"Under the current system materials and labour are charged against the job at the fixed standard cost which is set annually. Any difference in these costs are collected as variances and spread at month end across the major product type. Under the proposed system material is charged directly to the product as it flows through the process, labour is charged to the plant, sub-plant or cell, whichever is the driver of that cost from which is calculated a conversion cost for a period of time. The conversion cost is then assigned to the product as it flows through the cell depending on the time through that unit. They have identified time as the biggest cost driver within the cost structure, i.e. labour time is not recorded per job, labour is just charged totally to a cell, the driver is the lead time for component to travel through that cell from which there is a conversion cost, hence, the drive being to improve throughput with the quality being assessed on the acceptance or non-acceptance by the receiving department."

The team also noted some features of their visit to company E, which include the following:

- *Company E’s* production is driven by order rather than produce to stock
- The prototype is used for performance report and supports the financial reports.

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• Not proposed (at the time of their visit) to replace the financial reports.
• The proposed system is more of a performance driver rather than financial cost collection system.
• Main cost drivers identified are conforming to schedule, quality, lead times and down times which through the cell approach would be highlighted on increased product costs.

The prototype is able to indicate daily and weekly the cost of the unit of the component being built by applying the lead times to standard/ conversion cost.

The team further contended that company E had made a distinction between operational and financial reporting. At the level of operational reporting, the team reported that the performance measurement had been carried out based on the following - timely reporting (daily, weekly), monitoring key cost generators, graphical reporting and focus on continuous improved measured against competitive targets. At these levels, as reported by the team:

Major benefits have been at the plant operating level through encouraging greater consideration to be given to plant layout, improved scheduling, lead times and team efforts. Managers are able to manage the cells through the cost drivers on a daily basis rather than wait for any end of month financial reporting.

In evaluating whether this was applicable to SPPD, they stated that:

From SPPD's point of view, the concept here reinforces the importance of identifying the cost drivers and using them as a cost determinant rather than cost categories. These can be used on a daily basis to monitor performance. The concept could help some applications, particularly in the manufacturing services where in addition to control through the departmental cost, example machine shop, fab shop, the sub-plant and cell controlling application could be beneficial in measuring the performance of the job could also apply to product process as well. (p47)

Company F:

On Friday 25 May 1990, the Commercial-in-Confidence team visited company F located in Ohio State, USA. They contacted personnel of the visit were: the general manager for steel manufacturing control, the project manager for product & process costing steel business unit, the manager operating accounting, senior project co-ordinator for product & process costing steel business unit and a supervisor of systems control.

Company F was a leading manufacturer of tapered roller bearings for the auto, truck, machinery and railroad industries. It also was producing steel bars, rods, tubing and rock drilling bits. It was a subsidiary of a major steel corporation in USA. Company F employed 3,400 people in their steel operations and world wide they employed in excess of 20,000 people, with net sales of approximately U$1.7 billion, as was reported by the team. The team contended that their steel plants were electric furnace operations and the issue of

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future scrap supplies was becoming a concern. The customer for their steel making operations was their bearing division, which consumed 25% of the total output. The corporate company of company F run two major businesses, namely the bearing business and the steel business (which include rod & bar and seamless pipe). Company F had four different plants located in different states in USA.

The team contended, at the time of their visit, that:

*Company F* (emphasis added) have undertaken a program to substantially improve their performance, understand their business better, and to meet customer needs. This was the same message we got from every company we visited, but *company F* (emphasis added) have probably fallen a long way behind some of the other companies we visited, and was therefore taking on a large project covering many areas in order to improve their position.

As was evidenced at most other firms, the drive for the improvement was the initiative of a few forward thinking people in the organisation.

*Company F* (emphasis added) is a sponsoring company of the CAM-I (Computer Aided Manufacturing International) organisation and the impact of their association with this organisation is very evident in the development activities now (then) being undertaken by *company F* (emphasis added).

(p50)

At the time of their visit company F were involved in developing an integrated mainframe system through integrating such activities as order entry, production planning and scheduling, process engineering, cost management and data collection, as stated by the team. They further contended that:

This is a very ambitious project involving a lot of resources, but it was felt that it was vital that these critical areas all be addressed now. The decision to implement the five areas (as stated above) simultaneously was taken due to the independence of the systems and the age of the existing systems which were all in need of urgent overhaul. Five project managers have been appointed to cover each of these activities. They report to an overall coordinator/manager of the total project, who in turn, reports direct to the General Manager Manufacturing Control. (p50)

The team further reported that:

*Company F* (emphasis added) have been working with Ernest & Young (a consulting firm) since the start of the project and currently have a team of 30 people active in design work and utilising the Information Engineering Workbench (IEW) marketed by Ernst & Young...

In relation to cost management, *company F* (emphasis added) are committed to Kaplan four stage approach (see Appendix BB for Kaplan Model). They have assessed themselves as currently (at the time) at stage 2 of the Kaplan's model.

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The team reported that SPPD's position was somewhat similar to company F in regards to cost management. They identified the following features of the existing cost management system of company F:

- Standard direct costing system modelled on the Republican Steel which is viewed similar to SPPD's costing system with product profitability being reported after allocation of standard overhead costs.
- Takes three to four weeks to provide cost reports after the closing of the period.
- Focus on external reporting with inaccurate product costs allocation from cost centres.
- Standards are set annually for cost centres.
- Data collection problem particularly for time allocation and yields.
- Costing system does not recognised opportunity cost.
- Lacking of flexibility, timeliness and accuracy of data.
- Once a year each order is standard costed (no variance allocation) with this information is being used for the purposes such as product profitability, pricing and inventory valuation.
- Standard costs calculated on per heat basis until orders are assigned to heat, then standard product costs per order are calculated.

In elaborating on the proposed cost management system of the company, the team outlined the following points in regards to the expansion of their "Activity Based Costing" project:

- Identify processes/activities with definition for activities being split of a cost centres into discrete expense centres (multiple activities).
- Product costs then being made up of - raw material costs, manufacturing activities cost an opportunity cost.
- Non-Direct costs being applied on an appropriate cost driven basis rather than an arbitrary allocation basis.
- Proposing to continue to utilise standard costs for operational cost control with actual costs = actual production experiences and expected dollar rate. Expected costs (ie. standard) = expected production experience and expected dollar rates.
- Providing operational cost information through data base access and reports.
- Serving all major functions with integrated information stemming from a detailed transaction base.
- Providing ability to access information for "what if" type of analyses.
- Utilising work stations, working off Mainframe for product costing.
- Emphasising heavily on user input.

In commenting on the performance management system of company F, the team stated that it was a belief of the company that one must get the system and information right before starting to look at KPIs. In regards to maintenance management of the company

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they reported that maintenance costs was not a major issue to company F as it was generally control through proper budgeting. The team reported that introducing TQC concept by endeavouring to have more information at the shop floor level requires a very good integrated system.

**Company G:**

On Tuesday 29 May 1990, the team had a discussion session with five consultants of company G. Company G has a world wide consultancy business in many specialised areas including accounting related consultancy. This office was located in London, UK. Several issues, including the trend of cost management practices of UK companies, were discussed. The team commented that

The UK manufacturing industries appear to be heading down the same track in their line of thinking as the US. However, (1) they have not advanced so far, and (2) they are grappling with and facing the integration question.

The consultants viewed on the degree of integration that might be necessary in an world class business with the following arguments, as reported by the team:

General discussion about recent trends in cost management, particularly world class cost management concepts, activity based costing and computer solutions resulted in company G (emphasis added) advised the need to be careful about the degree of integration of management information in any computer based solution. For example, where KPIs or other management information is required, it may not be necessary to integrate this information into a management information database. Unless the same information is going to be used in multiple applications, it can a waste of time to hold it in a database. The size of the database becomes very large and there are substantially higher costs of maintaining the database.

However, if the data is used in multiple applications, the information should be collected from source into a database for subsequent use. Getting this information from source validates the information and ensures consistency of data in all subsequent applications.

The current feeling is that financial systems tend to capture too much data. When looking at the issue of computer developments, company G (emphasis added) believe that packaged solutions are a lower risk and quicker result proposition. They said that to date, they have not seen a firm in the UK integrate all their systems successfully.

In the discussion on the issue of data redundancy, the team reported:

In developing and using systems there is a need to step back and look at what decision is to be made. It may not involve costing and is likely to be focused on what is needed for day to day operations (non-financial indicators). On integration there is a definite recognition of the need to cut down on data relationship requirements, ie. if information is not needed at

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higher levels it should not be integrated upwards. Maintenance of unnecessary data relationships overburdens systems and associated development and support resources.

One of the outcomes of this discussion meeting with company G was to gather more information about the practices of cost management systems. The discussion resulted in viewing that "there is an emphasis on collection of the right data at source, on validation of information at keying in stage, and an understanding that there is not a requirement to measure everything". The team further reported that "there is a difficulty in communicating the need down to the shop level at data entry to record information correctly, i.e. emphasis on accuracy of information". Also, "there is a feeling that production and plant managers are beginning to want their performance to be measures and want their operations measured using non-financial indicators", reported by the team.

However, it was understood that it was not easy to measure performance indicators. From the discussion session the team revealed a few techniques that were used in determining the performance indicators by the UK companies, such as:

- Critical Success Factors (CSF) and strategy issues driven downwards from the CEO.
- Interviews at superintendent level and shop floor - allocating a lot of time talking to operational levels.
- Agreement on targets and acceptable variances.
- Understanding targets are not cast in stone.

It is stated that "there has been a noticeable motivational success when operational heads access the shop floor level KPIs, acknowledging achievement and question sub-standard performance".

In viewing the costing systems practice in the UK, the team reports that costing systems are generally traditional hierarchical standard costing system with the addition of activity based costing to the existing systems, either to improve product costing or to identify KPIs/cost drivers. Cost allocation being a predominant issue, as was viewed by the team. Responsibility for cost control based on traditional standard costing system was questioned and seen unsatisfactory in the UK practice. Practitioners started questioning whether it is meaningful what they do? For example, what variances actually mean? Do people associate with variances? Do people accept the causes of variances? How good was the standard cost in the first place?

However, the team viewed that 'management in the UK generally control costs through the product profitability and managing margins'. The discussion also directed by cautioning the understanding of the term 'product profitability', as reported:

There are experiences over here where the reporting of product profitability does not indicate the same trends as the overall profitability, i.e. misleading information has been provided in reporting the setting of standards with not all allocations being made to the product. Very few companies acknowledge there is an allocation problem. (p60)

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Discussion also brings the following points in regards to KPI, as stated by the team:

- Are the culture changes necessary to ensure the success of a KPI programme in place? Is there an acceptance of ownership of the KPIs at all levels? This is only possible where those to be held accountable were involved in establishing the KPIs.

- The traditional approach of driving cost control through the finance department is changing. As it becomes more accepted that there should be less financial information used and more operational information used in controlling and improving operations, there is a shift from the finance department trying to enforce cost control to the operation areas or cross functional group co-ordinating and monitoring the KPIs. p61

The team also drew a comparison between the CMS practice in the UK and other European countries and Japan. They were of the view that in Japan there exists very good operational system which facilitate them forming a strong performance management. However, they viewed that there was a belief that the European countries were following that trend.

From the discussion in the meeting the team discovered that some companies installed the SAP system to manage cost management and other systems. They commented:

SAP seems to be about 5 years ahead of other packages in the market, however it is more difficult than most to implement. Difficulties stem from the integration of non-SAP components. SAP imposes a need for a high level of integrity on the systems with which it interfaces. This features helps to drive responsibility for data quality back out to the source. The software is seen by most as a strategic direction - its strength lies in its integration across the range of business systems.

The consultants further stated that "you can't have a first rate information system without first rate data acquisition".

Company H:

On Wednesday 30 May 1990 the Commercial-in-Confidence team visited company H's London office in UK. Company H was an oil company. The purpose of visiting Company H rather than a steel business was primarily to view the application of the SAP system for improving the cost management practice.

The team identified how they installed the SAP system. They reported that initially company H looked at implementing SAP's general ledger system. After a successful implementation of the general ledger system, company H was at the time looking more at the other business packages of SAP integrated system, which included: Sales Reporting (RV), Material Management (RM-MAT), Asset Management (RA), Project Management (RK-P), Accounts Payable, Cost Management (RK-S) and Operating Results Analysis (RK-E) modules.

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The team contacted three personnel of company H: the manager systems & control division, an executive of system installation and the senior application adviser. In response to a question by the team about the SAP system, the executive of the system installation stated, as reported by the team, that:

Before SAP we tended to not only specify what we wanted a system to do, we also specified the way we wanted it to do it. This is a classic mistake - we should have focused on the business need - otherwise you get too tied up in the detail.

SAP displayed enormous strengths in the financial area. To introduce it we put in place an intermediate group to handle the transition from no information to more than could be handled. This intermediate group received the system outputs and in a controlled manner, progressively introduced them to their intended audience, in the mean time ensuring that the available information was properly utilised.

The team also reported that company H expressed their opinion about the SAP system as follows:

- SAP is perhaps not quite so strong in the marketing area as their competitors (M&D, CA, QSP) but they have a demonstrated ability to deliver the goods.
- SAP has grown through the development of their single product and their strength lies in the integrated nature of the various offerings and the technical backing which pervades the company, right through to the managing directors.
- Good level of service and support from a quality support team.
- Very reliable systems (only 4 package related crashes in 4 years).
- We (company H - emphasis added) do not encourage user written report.
- If resources permit - go for the "Big Bang" implementation. Incremental implementations have an effect on staff which is like running the hurdles after completing a marathon.
- Some screens are difficult to use for occasional users. Most users soon become familiar with and like the package, although first look can be daunting.

The team also viewed that company H had a number of false starts before the implementation of the SAP system. They (company H) began small and then found the SAP system to be special, the team commented. They noted also that the reasons for selecting the SAP system for thier cost management and other systems were as follows:

- Its ability to integrate modules, ie. develop each module separately and integrate on need. Company H actually started with fixed asset management then went on and develop purchasing, inventory.

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management, accounts payable, general ledger and costing. Next move will be sales and materials management.

The team also at the time spelled out some criticisms of the SAP system that "SAP is not as user friendly as some other packages" and interfacing existing system with the SAP system might be difficult". On the other hand, the team also appraised its potentiality by arguing that the "current problem everyone is going to SAP, it is reliable and proven packages".

**Company I:**

On Friday 1 June 1990, the Commercial-in-Confidence visited company I, which was a subsidiary of a largest steel producer in the UK. Company I's corporate parents sales in 1988/89 was US$9 billion, operating margin (before tax and depreciation) was 17.5%, with 8.5% return on capital and 55 000 employees, as reported by the team. The major business of the corporate groups were general steel, strip products, tabular products, stainless and many other diversified businesses. Company I was a part of the general steel division employing 7,000 people excluding contractors, as reported by the team. In 1989 it produced a record output of 4.3 million tonnes of liquid steel. It produced billets, blooms, rods, structural and heavy plates.

The team contacted six personnel including the manager accounting and finance, three finance officers, the cost accounting manager and the contracts manager computer systems development of company I. The team stated that:

- Probably the most significant feature of our discussions with company I (emphasis added) was their DAFA (Departmental Accounting & Financial Accounting) system for producing monthly results and their monthly performance review booklet. This system was developed in-house by the company (emphasis added) and is used widely throughout the organisation in both their general steel and strip products divisions.

- The DAFA system collects information from source by electronic medium (with a few exceptions where input is manual by the cost office). All production figures, sales, costing information from feeder systems are all collected on time. The monthly profit and loss is prepared after four days following the four weekly accounting period.

The team reported various levels of cost management techniques and procedures used at company I in the areas of forecasting, budget review, receiving production data, service centre chargeout, maintenance costs, product costing, inventories, performance management and cost reporting.

**Company J:**

Company J was a one of the computing services department of company I. It was a separate business unit. The team reported that it had 350 employees and about £20 million British pounds turnover per annum. The team investigated the central management services (computer systems) of the unit. They also reported on the company's management structure,
special projects undertaken at the time, facilities' management, sales and marketing, and the
departmental accounting and financial accounting (DAFA) packages. The trend they found
was towards the use of mainframe data collection and storage and PC for data processing.
The systems that were in place at the time were mostly batch driven, updated on weekly basis.

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Appendix 3
Appendix 3 Interview Documents

Informal Interview with Ms Kerry Reid (Leader Accounting Integration and Development Team) on 17 August 1992 at 2-00 pm: Venue - Warrawong IT Centre, Conference room 3, Port Kembla.

[This interview was not tape recorded. It was written based on notes taken during the interview.]

1. Is the IBS development consistent with your TQC Approach?

Reply from Ms Kerry Reid (KR1): Yes, the new Integrated Business System (IBS) project is consistent with our TQC approach... To an extent, however, it depends on how you set up the system... We need to analyse the business processes. TQC is a mean, it is up to us how we would go for the SAP system.

2. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed, how far have you overcome this problem?

Reply from KR1: I can see the potential is happening. We are structuring that way. Responsibilities are assigned. Something have to be managed. The role of the steering committee is to look into these affairs (ie. integration issues). Personality differences is always a problem. We have to manage that... We have the programs... All the functional owners have to sign-off... We are now structuring to do things from a very low level.

2a. What modules of the SAP system are you buying? If you do not buy all the modules from SAP what would be the likely impact you might have for integration and response time?

Reply from KR1: We are not doing, at the moment, Invoicing, Accounts Receivable, Production Planning and Scheduling. We are now looking at supply, contracts, purchasing, supply agreements with contractors, Maintenance management covering work planning, scheduling and costing, Finance covering G/L (general ledger), A/P (accounts payable), cost centre accounting, budgeting, fixed asset accounting, process costing, job costing, project management, Human Resources and Payroll, skill management and training requirement and employee data base.

In stage II, Accounts Receivable and Invoicing systems are probable. In stage III, which will be 7 years' plan.

2b. It seems previously you were of the opinion of cutting interfaces and limit integration. Why did management consider not to have more interfaces? Which interfaces will you be considering for next stage?

Reply from KR1: "Cost ruled out"... what interfaces should be in place.

3. Is there any difference between actual interfaces and budgeting interfaces?

Reply from KR1: They are two separate issues. It is our additional requirement - which is not coming from the SAP system. Actual Interfaces is coming from Mill areas.

4. Have you looked at such issues as cost centre hierarchy, alternate hierarchy, responsibility assignments and job numbers?

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Reply from KR1: We have done work on cost centre hierarchy. For the purposes of system's response, we may not have many hierarchies. We have done a fair bit of work on cost elements. We need to further explore supply cost elements. Now, job number represents for either cost centre number or job order number. Whereas Cost elements represent types of expenditure.

Responsibility assignment: we already looked at this issue, which is consistent with management hierarchy.

4. What are activities? How would they be decided? Will they be base on the process or cost elements?

Reply from KR1: It is not based on cost elements. Rather, it is based on the "nature of costs", such as tonnes produced, hours worked, time variable, tonnage variable, no of work days, etcetera. For example, Equipment Hours (E/Hr) - "they get it for us". Number of days - they are standardised figures.

5. What would be the basis of treating fixed cost within RK-S?

Reply from KR1: We are not using "pre-distribution". We are not using Assessment. We will be using ABC only. [Question posed: Why won't you use pre-distribution?] Kerry responded, "the use of the pre-distribution method has a lack - less effective budgeting... We not only do internal work, we also do external works. ABC method is more efficient."

6. How will the actual fixed costs be treated? Will they be based on planned activity or actual activity within the RK System? How will the variances be adjusted?

Reply from KR1: Responsibility accounting will reflect through management reporting. Variances will be shown separately, which will flow through users to users.

7. In what sense, do you think the SAP system is powerful?

Reply from KR1: Our biggest problem is our current systems. We don't have any common payment system... There is no links between common payment and supply system. There are multiple payment sources for mobile equipment as well as for petty cash - no integration between them. I believe, the SAP system can provide such integrations. From one input data and posting the SAP system can serve multiple purposes, it is a powerful system.

8. What is your evaluation about the functionality of the SAP system in the Maintenance management area, such as RM-INST and RK-A Work Orders?

Reply from KR1: Costing part is OK... May be restricted in scheduling labour and work orders, which are 'activities' in cost centres of Maintenance area.

9. Politically what is your position? Do you look after the interest of a particular group such as accounting and finance or the interests of all the functional owners and parties?

Reply from KR1: The job I got is integration. I have to ensure that requirements for accounting and finance are fulfilled. I also need to ensure that other areas such as Supply, RM (Maintenance and warehouse management system) and others are well integrated. I am supposedly looking at all the areas. Everything has an effect on general ledger. Technically I will be looking at all areas of interest. I have a good working relationship with all the functional owners and parties involved in this project.
10. Could you please comment on the recent changes of the project structure?

Reply from KR1: I believe the old project could not have handle what we are doing now. We are going for SAP's version 5.0c. Business as a whole becoming more demanding of information system that current systems could not provide. Old project could not have delivered integration. It was a mutually exclusive case... Scope of the project at the moment is bigger.

11. Some argue that there exists political struggle (ie, interpersonal or organisational conflicts) which might hinder the smooth development of the project. Do you think it is in existence? If so, is it a lack of good communication or good leadership or "things are so complex can only be foreseen constitutively" or what?

Reply from KR1: No, I don't think so. On the old project it could be. Experts are experts in certain areas. Certainly, there exists a certain amount of complexity... You can have a hunch... people's ability as arguer...

12. Do you see any problem regarding the resource availability including skills to handle the project?

Reply from KR1: Technical ability of people handling the SAP system is scarce. It could be a very long learning curve to learn the SAP system. We are putting teams. May be in the long run it will be in place. We are trying to get more people who conceptually know the SAP, especially from consulting side... Consultants are basically salesmen. One of the critical success factors is to get right direction... To get a quick direction is difficult. We wanted right direction from the beginning.

13. What sort of issues do you think might create a problem or hinder the smooth development of the project in the next phase?

Reply from KR1: We need to look at various factors including training, requirement definitions, mapping existing system then compared those to SAP... United thinking is necessary... Because, we are working in the dark.

Informal Interview with Mr Chris Cooper (Functional Owner of Maintenance Management) 12 August 1992, at 2-30 pm: Wednesday, Venue - Engineering Building, BHP-SPPD.

[This interview was not tape recorded and was written on the basis of notes taken during the verbatim conversations.]

1. Why do you think RM-INST (ie. SAP's Maintenance management module) is an unstable system?

Reply from Chris Cooper (CC): As it is currently available the SAP system is under developed for Maintenance area... It may be with the new version 5.0C of SAP which could handle some of our requirements, which would be available in January and February 1993.

2. Why do you think SAP functionality in respect to the Maintenance management is immature?

Reply from CC: Because the SAP system cannot keep the detail history of Maintenance records. It cannot run a forward budget... Routing and scheduling functionality are also limited.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
3. You stated elsewhere that the SAP system supports "the assembly type of manufacturing environment as opposed to continuous manufacturing processing environment". Why then are you going for SAP?

Reply from CC: You know, Maintenance is a dynamic function. We are not going for all of the SAP's modules, such as production planning modules...

4. If you cannot get the information such as Human resource data, work crew availability, skill information, roster scheduling, training information using the SAP system, then how do you handle these issues?

Reply from CC: We can solve them through improving work stations' information. Secondly, we still have the option to buy the SAP's HR module which covers some functionality to maintain such information.

5. Could you please comment on the "user profile issue"? What are the possible likely consequences if it is not handled properly?

Reply from CC: In Maintenance every person will have a user profile. It is very important for accessibility. There could be various profiles such as profiles for planning, scheduling and repairs. We need to establish users' profile very carefully, which will reflect the individuals' responsibilities.

6. In what sense do you think SAP system is powerful?

Reply from CC: It is a powerful system because it facilitates a broad level of integration... It will allow us to control, especially the user management and matching responsibility to action.

7. Do you have any concern in respect to 'capacity' issue?

Reply from CC: It is an important issue for us, because Maintenance is a growing area, needs a large data base. We need past data. For computer response time, high capacity in archiving Maintenance control data base should be the main feature of our proposed system.

8. Could you please comment on the following terms used in your Maintenance management area - condition monitoring, instrument calibration and strategy development?

Reply from CC: Condition monitoring is a measurement of variables that represents the quality of usage of an asset such as measuring depreciation quantity.

9. What is your stand politically in the project management hierarchy? Are you willing to accept any "stand alone" functionality irrespective of fulfilling the requirements of other functional owners?

Reply from CC: We have pass that situation. Now we got to include some additional functionality into our IBS (Integrated Business System).

10. Some argue that there exists "political struggle" that may hinder a smooth development of the project. Have you seen any such struggle including interpersonal and organisational conflict? Do you see any communication problem among various functional owners? Or, it may be that "things are complex" which can only be foreseen "constitutively"?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from CC: It is a complex project. I don't believe any individual can take any decision in such a situation. We always look for an organisational solution rather than individual solution. When any problem arises we must force a resolution through a committee. Committee is the only entity which resolves the issues. For the Phoenix 21 project, there is a steering committee which resolves the problems and makes decisions of the project issues.

The SAP system is underdeveloped in certain areas, lagging 5 to 10 years in respect of Maintenance function.

Our discussion continued up to 4-00 pm. I came back to the university.

Informal Interview with Mr Rob Thomas (Project Manager - Change Management / Implementation Team) on 21 August 1992 at 1-00 pm.: Venue - Warrawong IT Centre, Port Kembla.

[This interview was not tape recorded and was written on the basis of notes taken during the interview.]

1. What are the major activities that the implementation team are currently involved with?

Reply from Rob Thomas (RT): The members are currently updating their knowledge on every new module. They are updating knowledge on SAP's new release 5.0c. The manual for version 5.0c is currently available. We are also looking at for accredited training courses to meet the government requirements. Five of us involved with that. At the moment, we are also viewing IVI (Interactive video Instructions) course in understanding the change.

2. What is a "business process"? How does it differ from "budgeting process"? Who is going to prototype the business processes?

Reply from RT: Input vs output... (I could not take good notes on this response).

3. What role does the change management play in developing your Cost Management Systems (CMS)?

Reply from RT: You see our DISC system is a stand alone system. It is not integrated with other systems. IBS incorporate CMS and others to reduce the interface and maximising integration by inputting information at source. The change management strategy would be to implement a good management system, to be competitive in the world market. Change management has two major roles: (1) Human roles and (2) skills or technical role. They are inter-related. It is hard to manage people. Change management is to help people to go forward positively. Help in improving training skills and understanding technologies. You see, people came from different cultural background, differing age factors... identifying people's anxiety then work through them... needs good training.

4. In what respect the CMS is equivalent to your Integrated Business System?

Reply from RT: CMS is a stand alone system. The IBS is much broader...

5. What major roles that the implementation team will play in developing the CMS during the next phase of the project?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from RT: Major role for the implementation team is making sure that before the implementation of the proposed system that it is accepted in SPPD. Another important role is to train people in SPPD.

6. The development team believes that the project is still in the "first phase". Could you please comment on that?

Reply from RT: It is a first phase for the development of the IBS. It is a new project now.

7. Would you give any value to the work that were done by the "conceptual design" and "functional design" team at the earlier stage of the project?

Reply from RT: I could say it has a lot of value. They have shown the problem, provided background information. Team work is established. We also established a "buddy system". They have done a lot of positive thing, a very little negative. It could be considered a foundation. We have not yet seen much above the ground. We are looking forward to build an excellent building!

8. To you, what is a cultural issue?

Reply from RT: People themselves... managerial class... management power... the fence between workers and management - all these are cultural issues. Mostly people being told what to do. We change that attitude a bit. We developed a sharing approach by developing the TQC approach at SPPD. We are in the transition of change. It is a cultural change... management has the power side of it.

9. What is TQC Approach to SPPD? Does the SAP system is compatible with your TQC Approach?

Reply from RT: Yes, particularly in the area of updating. [I could not write good notes on this conversation].

10. In what sense do you think the SAP system is powerful?

Reply from RT: It permits input at source. It can provide real time information. Various graphics and reporting facilities are also available.

11. Some argue that there exist political struggles (ie, interpersonal or organisational conflicts) which might hinder a smooth development of the project. Do you think it is in existence? If so, is it a lack of good communication or good leadership or things are so complex which can only be foreseen 'constitutively'?

Reply from RT: It goes back to the decision for the development of the CMS. Personality changes... personal issues... people don't want to work with change leadership... mix between "good" and "spark"... we are trying to set a new organisation in place...

12. What would you like to achieve through a training need analysis?

Reply from RT: We may have to do more on this area. End users need to be trained. Understanding the equipment requires training... To ensure good implementation training is a vital issue.

13. Do you see any problem in regard to the resource availability including skill people to run the project?
Reply from RT: No.

14. In order to successfully implement your Integrated Business System what important aspects will you consider most?

Reply from RT: To make a system user friendly there is a need for elaborate documentations of the system. It is very important, which can be used as a basis for good training. Training have to be thorough. In Australia, you need to keep training records (standard procedures)... So, two things such as documentation and training are very important.

15. Is it possible to prototype the "training need analysis" without joint efforts of both the teams, ie. the Implementation and the Development teams?

Reply from RT: It would be good if it is a joint effort.

16. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed. How far have you overcome this problem? Do you see any communication problem among various "functional owners"?

Reply from RT: Nothing much is done yet. We are looking forward to seeing that. We need to emphasis on team work.

17. What level of decision making authority could you communicate?

Reply from RT: I communicate with the project director, Mr John Bown, and the implementation manager, Mr Steve Sanders.

18. Could you please comment on the recent structural changes of the project? What is the current position of the project structure?

Reply from RT: Define the area of authority for project members then get on with it. Latest structural change of the project reflects the size of the project and shifted the direction of our thinking from the stand alone CMS to incorporate the IBS. Throughout we have been trying to ensure communication is maximised. Next week a decision will be taken on that.

Interview with Mr Kas Zoszak (Project Manager - development team) on 4 September 1992 at 10-00 am: Venue - Warrawong IT Centre, Port Kembla.

[No tape recording was made. The following conversations were written based on the notes taken during the interview.]

1. When did you join in the project?

Reply from Mr Kas Zoszak (KZ): Since October 1991 I have been involved with this project as a full-time member. Primarily I have been involved with a management role. Before joining this project, I was involved with several commercial system development projects. Now I have a single responsibility to develop the SAP product.

2. What are the criteria have you adopted in selecting the project personnel?

Reply from KZ: For financial area - we looked at to those personnel who have appropriate business knowledge. For users side - we looked at to those who does not hurt the organisation. Of course, the personnel those who are capable of thinking
conceptually, have business skills and previous SAP experience, have also been considered. We also looked at other personal attributes such as quick thinkers and personality style. However, we have tried to select best people.

3. What major requirements have driven your IBS (Integrated Business System) as opposed to the CMS, where it is stated that in SPPD the CMS is driven by three requirements such as 'strategic', 'operational' and 'financial' requirements. Do you think the IBS can fulfil some additional requirements?

Reply from KZ: CMS analysis is our initial benchmark. It was our starting point... Now, we are looking at for more integration characteristics such as drill down facilities and data entry at source. [He provided me a copy of the memorandum of the approval of the IBS project submitted to the group general manager (GGM) on 2 September 1992.] You might find the answer from this memorandum of submission to the GGM.

4. In what ways could you evaluate the work that have been carried out by the functional and conceptual design teams under the previous project structure?

Reply from KZ: [It seemed to me that he was a bit reluctant to answer this question]. Yes, we could... For example, due to those earlier work done, we could prototype the documentation processes very quickly. For those works our greater awareness came along for issues such as process costing, financial and integration.

5. Some argue that the project is yet in the "first phase". Could you please comment on this?

Reply from KZ: Now, we are following an integrated approach. We need to understand integration issues. In order to get the benefits of integration we have to make sure that all interface areas are in a common platform, so that they can go together. Logically, we are one team. Recently we added the Supply system into our IBS scope, which should also go together with the costing system. In this sense, we are yet in the first phase.

6. Why do you think "one should avoid assumptions" in developing and/or implementing a project like this?

Reply from KZ: My concern is if anyone got a problem or an issue he/she should raise it with recommendations or with alternatives. I suggest not just to make assumptions. It also depends on the type of people.

7. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem among various functional owners?

Reply from KZ: We are still in an early stage of the project. Costing is well advanced. Business benefits depend on the integration both in terms of functionality and managing business processes. We should ensure that we can reach a common platform. A major problem at the moment is Maintenance engineering area, because of the different management style. I wish our new project director, Mr Bown, could overcome this difficulty. It seems Maintenance engineering has some hidden agenda. However, there exists a bit of power struggle. Let me put it this way.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
8. Have you seen any political struggles (including interpersonal and organisational conflicts) among various members of the project or owners? If so, what are the major reasons for such conflicts?

**Reply from KZ:** You see, the functional owners have the operational responsibilities. That is, they have to ensure that the system is operational. They have to sign-off. Yes, to a certain extent, there are.

9. Previously you were of the opinion of cutting interfaces and limit integration. Now you are going for more SAP's modules, what are they?

**Reply from KZ:** Yes, previously we did that because other owners did not come along. Cost is an important issue too. Now, we are going for Supply system, Maintenance management, Assets/projects (this will replace our EWAS system), A/P (this also involves supply and costing) and Human resources systems. We need to think about the Human Resources modules because we have a very good system in place. However, we are going to have a workshop on this in Sydney next week with the SAP consultants. Our in house A/R (invoicing system) is good too. Whether we are going for it or not, we need to analyse it further. Sales (RV) and Production Planning (PPS) modules are future possibilities.

10. Do you see any lack of resource availabilities in developing and implementing this project?

**Reply from KZ:** Yes, I think so. For example, utilisation of consulting services for issues such as screen painters for added functionality and in house ABAP/training. We need more experts in those areas.

11. What sort of roles will IT play in maintaining the system after the proposed implementation?

**Reply from KZ:** Certainly they will play a major role. IT will play roles such as facilities' management (ie, computer system management), users' help desk, application support consultations, archiving Data Base, users' community contact, diagnosis and rectification of any systems' problem. I have suggested for a specialise group for technical support who will look after the interfaces. They will also monitor and facilitate upgrading existing system versions such as from SAP R/2 to R/3.

12. Who is going to prototype the business processes?

**Reply from KZ:** I wish the group led by Ms Kerry Reid would do those in their own right.

13. What sort of impacts do you think this SAP migration will have on your IT staff?

**Reply from KZ:** I believe our in-house application support people would be halved in number... I believe we will be a preferred SAP installer in the market place. BHP-Information Technology will be a platform for SAP software installations for other BHP centres such as BHP-steel and BHP-Petroleum.

14. To you, what is a “cultural issue”?

**Reply from KZ:** [Laughter!] It's a very open question, really! To me, a major cultural issue at the moment is the relationships between BHP-IT and its' clients such as BHP-SPPD. I see a lack of clear accountability between project structure and client structure.

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S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
15. In what sense do you think the SAP system is powerful?

Reply from KZ: SAP system is very rich in functionality. It is an integrated system. It covers a diverse range of business processes and offers integrated functionality. It offers a real time integrated system.

16. In order to successfully implement your IBS what important aspects do you consider most?

Reply from KZ: It is very much depended on labour resources. I mean you got to have right people, proper planning at the early stages of the implementation making sure the project look after itself. Also, commitment from senior management is a critical factor for a successful implementation.

17. What sort of issues do you think could create a problem or hinder the smooth development of the project in the next phase?

Reply from KZ: I think it's a similar question as that of 16.

18. What emphasis have you given in designing the new project structure?

Reply from KZ: You see, to me, project should be seen as SPPD's own project. We are service providers. We got to make sure that the ultimate implementation reflects integration. We are working in conjunction with SAP consultants in that regards. One of the important emphasis we have given in this new structure is to place a project director who is neutral to the functional owners, who is not biased and can keep functional owners under a balanced control. As you know, our new director is Mr John Bown, who was formerly Public Affairs manager at SPPD.

Another emphasis is given establishing a separate cell for technical support group which is leaded by Mr Rodney Winbank at the moment. Also, we have given a special emphasis on change management. We have a new implementation manager Mr S. Sanders who would be looking after the change management issues.

We believe the implementation cost is about 25% of the project costs.

I thanked Mr Zoszak and said, I might go back to him again. I used to go to him almost every week to update my knowledge on the project. End of the interview at 11-00 am. I came back to my desk.

Interview with Mr Bill Martinoski (Ex-Leader Accounting Implementation Group) on 4 September 1992 at 1-30 pm.: Venue - Phoenix 21 Office, Warrawong IT Centre, King Street, Port Kembla.

No tape recording was made. The following conversations were written based on the notes taken during the interview.

1. When did you join this project?

Reply from Bill Martinoski (BM): As you know, the initial stage of this project started in June 1989. I was basically involved since the beginning of the project. At the time, it was called costing system review project. We conducted an interview workshop to identify problems or constraints of the DISC system. We identified many feeder system problems. We conducted this in a joint study with a consulting group called PA consultancy group, Australia.
In May 1990 we investigated FACTS (Financial and Costing Transactions) to see three features such as (1) accuracy, (2) reliability and (3) accessibility. It was not meant to be a costing system rather pooling data available to use in the investigation.

We also evaluate software packages on OLAS (On-Line Accounting System). This is done by a consultancy company called Quality Software Computer Associates. Documentations have been taken from three software companies such as (1) Walker Industry, (2) Dunn & Brad Street and (3) SAP AG International Ltd.

SAP is selected for evaluation in September 1990. Initially, we develop our system requirements throughout this evaluation. Training also involved. During Feb/March 1991 the project was approved for implementation as a stand alone costing system, especially concentrating on the budgeting and costing areas. We did not prototype other systems at the time such as RM (Warehouse Management), Production, RV (Sales) systems.

As you can see, it is from June/July 1992 we have been looking at the implementation of an integrated business system (IBS). Of course, the final acceptance of which is subject to approval by the group general manager.

I am basically involved in the project since the beginning with some capacity.

2. What major requirements have driven your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial' requirements. Do you think IBS can fulfil some additional requirements?

Reply from BM: Basically in order to achieve the objective of CMS we should have to have a well Integrated Business System (IBS). If you like CMS is the objective [of the Phoenix 21 project from Finance and Planning point of view] and the IBS is rather means (or tool).

3. In what ways could you evaluate the work that have been carried out by the functional and conceptual design teams under the previous project structure?

Reply from Bill: Those works basically provided us benchmarking and lots of training in some respect. Those designs provided us a methodology in carrying out further implementation of the project. It also highlighted deficiency - someway led the direction for further improvement.

4. Some argue that the project yet is in the "first phase". Could you please comment on this?

Reply from Bill: Technically, I guess we are now. It is completely a new project. Some of the areas are well advanced. If we consider integrated business system (IBS) as opposed to a stand-alone costing system, then, certainly we are in the "first phase". We need to bring along the other systems (such as Maintenance, Supply and Human Resources) in line.

5. Have you seen any political struggles (including interpersonal and organisational conflicts) among various members of the project or owners?

Reply from BM: Yes, I think potentially there exist such struggles. It is simply because we are not integrated thinkers. There are conflicts among engineers, finance and other people. I believe there is a need to vision this within the division. It is possible, for
example, that the business objectives are inconsistent with maintenance management objectives. Departmental vs organisational issues need to be minimised. (There exists) Potential work isolation scenarios, such as 'I am not an engineer and so on'.

6. To you, what is a "cultural issue"?

**Reply from BM:** To me, culture is depended upon (a) assumptions of work behaviour/functions, (b) value of work behaviour/functions, (c) norm of work behaviour/function, (d) technology changes, (e) structural changes - whether it would be reporting or responsibility changes.

7. In what sense do you think the SAP system is powerful?

**Reply from BM:** One of the good side of the SAP system is that it eliminates manual fixes. In the SAP system, proliferation of sub-systems does not exist. It is powerful in managing business information with flexibility. Of course, its integration facility makes the system powerful.

8. Is the SAP system compatible with your TQC approach?

**Reply from BM:** I guess our TQC approach is consistent with the development of the proposed IBS using the SAP system.

9. What issues do you think should be considered important in the costing area under this new implementation?

**Reply from BM:** In my opinion, we need to look at both the functional and implementation issues. From functional point of view, the most important critical question is to ask: why do we need costing system? Fixation of micro level issues such as deciding on the fixed and variable split, activities, cost drivers as well as technical issues, (needed to be resolved). From implementation point of view, the critical issues are understanding change processes specifically departmental re-structuring and job re-structuring, and measuring effects on people due to these changes (behavioural implications). It goes more than that such as designing award systems.

10. In order to successfully implement your IBS what aspects do you consider most important?

**Reply from BM:** We need to ensure that what we are developing is an integrated business system - good integration management - consistent policy - who should evaluate the objectives in the light of overall divisional needs.

11. What are activities? Will they be based on processes or cost elements?

**Reply from BM:** Activities are outputs or cost drivers of a given cost centre. They base on processes rather than cost elements. It is used for cost control and cost allocation.

12. What would be the basis of treating fixed costs within the RK System?

**Reply from BM:** We need to re-visit this issue more carefully.

13. How will the actual fixed costs be distributed? Will they be distributed based on planned activity or actual activity within the RK System? How will the variances be adjusted?

**Reply from BM:** We need to re-visit these issues as well.
14. Have you noticed any behavioural implications among various users of the system at this stage?

**Reply from BM:** Some areas are seen to be very negative. It is very hard to distinguish. The problems are - lack of understanding, uncertainty about jobs to be done, impact of individual personality, individual jobs changes, some concern of complexity. You know, to have a flexible system generally imply some sort of complexity - isn't it?.

15. After the implementation of SAP system, do you think will you be needing more people? Can the existing personnel handle it?

**Reply from BM:** We may need fewer people but with high skills. In the past, an individual task might not be known to others. Now under the real time system people need to know other individual works to reflect integration and providing real time information. People on board need to understand the overall implication of the system in addition to their own functional areas. Off-loaded systems, in other words, passing one departmental work to another, wouldn't be needed under the SAP system.

Finance and planning, for example, being away from only "number crunching" will be looking at other matters at divisional and business unit levels and so on.

Now, IT is also focusing on for multi-disciplinary skilled people for both internal and external marketing. SAP is also moving away from R/2 to R/3.

16. In this multi-disciplinary project who do you think plays a major role?

**Reply from BM:** In an integrated project like this - basically, the individual functional owners from differing areas play the key roles. As well, it is more or less constitutive type - there is no "win-lose" or "win-win" situation.

17. If you are involved with a project does it add any credit to your HR report?

**Reply from BM:** In terms of financial rewards, no. Yet, extrinsic benefits that are to be awarded need to be thought through. But the individual who engaged in the project team gains a lot of knowledge. It's an opportunity for people to involve with such a project. If implemented, this IBS will break the normal bureaucratic structure at SPPD towards an open structure.

It is difficult to classify people in the project. Our responsibility goes beyond the supervisor, however we are not paid for that. After the implementation there is a need for structuring reward systems. It is possible that the members can become a "guru" on the area.

18. Are you happy with the current structure of the project?

**Reply from BM:** Yes I guess so! That does not mean that I have no concern. For example, allocation of task is a bit ambiguous. Lack of resource availability... Allocation of tasks yet to be defined within various functional areas. Tasks need to be subdivided as primary and secondary tasks. Because people tend to avoid secondary responsibilities. It is also essential that people involved with the project talk each other. Responsibilities regarding the implementation are to be assigned.

The interview ended at 3-00 pm.

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S C Lodhi: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Informal Interview with Mr Geoff Armstrong (a project member - development team) on 15 September 1992 at 3-00 pm: Venue - Warrawong IT Centre, Port Kembla.

[No tape recording was made. The following conversations were written based on the notes taken during the interview.]

1. When did you join in this project?

Reply from Geoff Armstrong (GA): I joined this project in December 1992.

2. When did you join in BHP-SPPD?

Reply from GA: It was about 10 years ago I joined in BHP-SPPD. Now I am a staff of the BHP-Information Technology.

3. What major areas were you involved with the project?

Reply from GA: I am involved with process costing, cost centre accounting and operating results analysis. In fact, I am involved with all the areas of RK costing system.

4. What major requirements drive your IBS development as opposed to the CMS development, where it is stated that in SPPD the CMS is driven by three major requirements such as 'strategic', 'operational' and 'financial' requirements. Do you think the IBS can fulfill these requirements?

Reply from GA: It is an interesting question. I think, CMS might not fulfill these three requirements in all business areas. It may fulfill the financial and operational side but not the strategic roles. IBS can fulfill all these requirements.

5. In what ways could you evaluate the works that have been carried out by the functional and conceptual design teams under the previous project structure?

Reply from GA: Previously, the scope of the project was not specifically defined enough. The goal of the project was a bit of confusion. Now, our objectives and goals are much clearer. Mr John Bown (project director) and Mr Jim Hall (project chairperson) have been focusing on that. With the earlier project the missing part is the IBS (Integrated Business System). All resources are now directed towards achieving the goals of IBS.

6. Some argue that the project yet is in the "first phase". Could you please comment on this?

Reply from GA: We have not implemented anything yet. From SAP's point of view, we are still in the selection stage of modules. We have selected only few in the area of financial, costing and Maintenance. We have not yet selected any HR and PPS modules. A reason of this is that we have a very sophisticated in-house system for HR and PPS systems.

From BHP's point of view - SPPD will be the major side. The project is in a first phase to BHP as it yet is in the stage of testing. This IBS project is an experiment to SPPD.

7. Have you seen any political struggles (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from GA: There exists potential conflicts between various parties. We are developing IBS. Therefore as a pre-requisite we have to share or interchange information and we have to be consistent in this regard. Conflict is not a bad thing. It will be bad if anyone personalises that. In that case, it would become destructive. Conflict is good if it is constructive. However, it can become a negative thing very easily if we are not careful about that. Therefore, we all have to look for a solution rather than creating problems.

8. In what sense do you think the SAP system is powerful?

Reply from GA: It is a powerful system because of the following reasons. From business point of view, it offers integrated facilities in lots of levels. It has a flexible reporting facility. It has a reputation as a powerful company. That's big impact in the market. It's a real time system. It covers a wide range of business areas. Clever ideas... Cost component split is a good functionality and a new idea to us. We are focusing this in our requirement definitions.

9. Can the SAP system be compatible with your TQC approach?

Reply from GA: I don't think TQC yet is fully integrated.

10. What issues do you think important to be considered in the costing area under this new implementation?

Reply from GA: I think, there are lots... what measures management wants to undertake in order to run their business. Basically everything falls behind that. Reporting, input/output, user friendliness... though it is a funny issue... initial level of knowledge might be difficult once anyone gets over that hurdle you cannot say it's not a user friendly... to some extent buzz words.

11. In order to successfully implement your Integrated Business System what important aspects do you consider most?

Reply from GA: The following requirements would be important: One time data entry, validation at source, functional design linkage between different functional areas should be well thought out especially internal interfaces between various areas. Individual system would not be a problem... Interface issues are very important. Good example, costing issues between Maintenance management and Cost Centre accounting. We have to look forward to develop for a consistent approach. Of course, in doing so there appears personality problems. For example, Maintenance management has a different management style - them and us attitudes. Maintenance is a waste example of that.

12. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem between various functional owners?

Reply from GA: Internally the interfaces are there. Everybody will have access to the same database. Our task is to design interfaces - no of external interfaces are small. Yes, there exist communication problems. We got to develop a prototype at a very low level. Functional design phase has to be completed by next March. Functional areas have to be on time. They cannot be late. Project management is in the hand of IT. They have to adhere to that.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
13. Previously you were of the opinion for cutting interfaces and limit integration. Now you are going for more SAP modules - what are they?

Reply from GA: We are buying RF-GL, all RK-S, RK-E, RK-P (replacing our existing EWAS system), Maintenance Management RM-INST, For Supply RM-MAT, Purchasing, Invoice Verification. We are still deciding for HR.

14. Who is going to prototype the business processes?

Reply from GA: Certainly, it would be the project team who will prototype the business processes. Of course, it has to be approved by the functional owners. There would be a successive larger prototypical exercises based on the existing processes.

15. What are activities? Will they be based on processes or cost elements?

Reply from GA: For each activity you will have cost elements. Activity equals cost pool. Activity can be overhead or service or product. Our existing DISC system is along the activity cost system. In SAP activity is "three letters' name".

16. What would be the basis of treating fixed costs within the RK System? How will the actual fixed costs be treated? Will it be distributed based on planned activity or actual activity within the RK System? How will the variances be adjusted?

Reply from GA: Until now we thought we are going to use ABC (SAP's terminology)... Change of focus of performance measurement is needed. Budgeting is critical. Variances will flow through to the end products. Internal Variances produced by cost centre. External Variances come from another users.

17. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from GA: Yes, just an initial fear. They are not feeling comfortable at this stage. Sometimes they make a lot of jokes such as 'it's a disaster'. Negative approach... initial resistance... which are expected.

18. To you, what is a cultural issue?

Reply from GA: To me, a cultural issue may be the accepted norms that the organisation have. It is the mind set of people of the organisation really. In BHP-IT you can find a strong established culture.

19. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from GA: I would have thought a lot of people from the project team would go back to SPPD to maintain the system. Initially team will be moved out.

20. In this multidisciplinary project who do you think plays a major role?

Reply from GA: Finance and Planning plays a major role. It's natural... CMS to IBS... "Dollars measure". Finance is a centre of most kind of 'things', isn't it?

21. If you are involved with a project does it add any credit to your HR report?

Reply from GA: In this particular case, yes. For instance, IT will be a preferred installer in the market place. IT sees future market within SPPD... I would think so. Yes, it does add credit. Also, we will gain knowledge and expertise.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
22. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from GA: Maintaining the system. For example, Henry Farnendaz will look after the administration of the system. BHP-IT has a broader role in enhancing functionality.

23. Do you see any change of focus that future accountants need to be aware of?

Reply from GA: They need to be aware of that information technology is a big challenge these days. Applying the technology is a most important factor.

24. Are you happy with the current structure of the project?

Reply from GA: Yes.

25. What roles do you think should BHP-SPPD play with IT in maintaining the system after the implementation?

Reply from GA: We will be a team. Making sure we trained the latest version of SAP development. Selling it to SPPD - growing business... Instigate ideas. As far as SAP is concerned we are the driving force.

End of the interview at 11-25 am. I thanked Mr Armstrong.

Informal Interview with Mr Scott Reed-Stephenson (a project member) on 17 September 1992 at 9-30 am.: Venue - Warrawong IT Centre, Port Kembla.

[This interview was not tape recorded. It was written based on notes taken during the interview.]

1. When did you join in this project?

Reply from Scott Reed-Stephenson (SRS): I joined this project in March 1992.

2. When did you join in BHP-SPPD?


3. What major areas are you involved in the project?

Reply from SRS: At present, I am involved with stock management, stock reporting, inventory report (RM-MAT). I am also involved with budgeting and job costing.

4. What major requirements drive your IBS development as opposed to the CMS development using the SAP system, where it is stated that in SPPD the CMS is driven by three major requirements such as 'strategic', 'operational' and 'financial'? Do you think IBS can fulfil some additional requirements?

Reply from SRS: I think it would fulfil all of these requirements now. IBS would focus more on strategic... We certainly got to improve in other areas as well. Now people would be more willing to use it, will have more faith on information system.

5. In what ways could you evaluate the works that have been carried out by the functional and conceptual design teams under the previous project structure?
Reply from SRS: In lots of the cases people continued from those works. I don't think it would be 'stop and change' situation. The processes of building knowledge... assessing the work time to time... you cannot change people mind set.

6. Some argue that the project is yet in the "first phase". Could you please comment on this?

Reply from SRS: It's a tricky question really. To me, it's an 'expanded phase' rather than the first phase.

7. Have you seen any political struggle (including interpersonal and organisational conflicts) among various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from SRS: Lately, there have been many. Probably there will be some in Maintenance management area. They may not like the SAP system very much. They might have some alternative choices. Some doubt about functionality... few negative feelings. Other than that people have accepted that the SAP system is going to be installed. No really, I have not seen much of the conflicts.

8. In what sense do you think the SAP system is powerful?

Reply from SRS: Integration and automatic update and adjustments, real time are few examples of SAP's features. In the past everything we used was in batch. Initially however the limitations of the SAP system what we call the problem of user friendliness.

9. Can the SAP system be compatible with your TQC approach?

Reply from SRS: The TQC approach search for a continual improvement. Certainly, it is consistent with the SAP implementation methodology.

10. What issues do you think important to be considered in the budgeting and costing area under this new implementation?

Reply from SRS: To me, budgeting is an important issue. How to prepare a budget. After preparation of budget what do you do with it? Usage of budget... people mind set regarding how budget figures would be used. Management reporting - comparison between actual and plan, we should give more emphasis using budget as guide, ie, using budget as means rather than end in itself. Measuring issues - for example, working out usage of electricity, production reading, metering system, allocation of fixed costs. An important issue is to get correct information. Once you have that information there is no problem. SAP can handle that very well. All these also have cultural implications such as attitude... whether it is worthwhile and so on.

11. In order to successfully implement your Integrated Business System what aspects do you consider most important?

Reply from SRS: I think training and users' acceptances of the system are very important. They are also interrelated.

12. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed, how far you have overcome this problem? Have you seen any communication problem among various functional owners?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from SRS: It's not my problem. I cannot see that should happen. I would hope that our project director, Mr John Bown, can handle that very well. It has not been a problem. However, it is getting to the time more communication would be needed.

13. What are "business processes"? Who is going to prototype them?

Reply from SRS: Business process to me is something needs to be done in the normal course of business. You start with end results then worked backward. All these processes can be called business processes. In the past people were more tasks oriented. People never questioned what role business processes play in accomplishing the tasks. If you can take the overall view it helps to achieve end results and can eliminate lots of waste or unnecessary processes or bottlenecks. It is the functional owners who are going to prototype them. I am also involved with RM-Material at the moment. Communication is very important.

14. What are activities? Are activities is different from business processes?

Reply from SRS: In SAP's RK system "activity" is a three letter word, not a philosophy. Whereas activity based management is a philosophy, which is consistent with the philosophy of business processes.

15. What would be the basis of treating fixed costs within the RK System? How will actual fixed cost be treated? Will it be distributed based on planned activity or actual activity within RK System? How will the variances be adjusted?

Reply from SRS: Emphasis on planned values... Variances will flow through cost centre to cost centre.

16. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from SRS: They want more information at this stage. More keen to getting involved with the project. Not too many negatives.

17. To you, what is a "cultural issue"?

Reply from SRS: To me, a cultural issue is "people's reaction"... how people feel about change.

18. After the implementation of the SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from SRS: People will do different work... In some cases fewer people will be required... not "number crunching" rather analysis... play with computer, split reports... proactive types of work. When system will be in place there is a need for broader knowledge of the SAP system to be effective in the job. Less task oriented work in future.

19. In this multidisciplinary project who do you think plays a major role?

Reply from SRS: Depends whom you ask. Finance people would say we are. Supply would say they are. Certainly project team would play a major role.

20. If you are involved with a project does it add any credit to your HR report?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from SRS: You would hope so. Depend on what job you go into next. People would get more experience. What is your next job is determined by who is selecting you.

21. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from SRS: They would have more active role in management of business unit. There will be less number crunching, rather will be involved with process improvement, efficiency analysis, etc.

22. Do you see any change of focus that future accountants need to be aware of?

Reply from SRS: In future accountants need to have multidiscipliery skill. Technology getting more important. High emphasis needs to be given on basics in education.

23. Are you happy with the current structure of the project?

Reply from SRS: That's fine with me.

24. What roles do you think should SPPD play with IT in maintaining the system after the implementation?

Reply from SRS: Users should control the maintenance of the system.

The interview ended at 10-50 am. I thanked Mr Reed-Stephenson.

Informal Interview with Mr Henry Fernandez (a project member) on 17 September 1992 at 2-00 pm: Venue - Warrawong IT Centre, Port Kembla.

[This interview was not tape recorded. It was written based on notes taken during the interview.]

1. When did you join in this project?

Reply from HF: I joined this project in February 1990.

2. When did you join in BHP-SPPD?

Reply from HF: It was the first time for me in BHP, ie, I joined in February 1990.

3. What major areas are you involved in the project?

Reply from HF: My primary responsibility is assigned to design general ledger (RF-GL) including Accounts payable (A/P) and Fixed Assets.

4. What major requirements drive your IBS development as opposed to the CMS development, where it is stated that in SPPD CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial'? Do you think IBS can fulfil some additional requirements?

Reply from HF: IBS is much broader concept than the CMS. We are only doing operational side. Total Performance Management System (TPM) yet to be brought into the IBS.

5. In what ways could you evaluate the works that have been carried out by the functional and conceptual design teams under the previous project structure?
Reply from HF: It had to be evolved. For me, it's a foundation, where we initially started... Further requirements such as ledger and chart of account structures do not need to change much. For Accounts Payable we have to start from the scratch.

6. Some argue that the project is yet in the "first phase". Could you please comment on this?

Reply from HF: Because they have drawn a line. We all have to come along the same line.

7. Have you seen any political struggles (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from HF: Certainly, there exists such struggles. In fact, if we look at the project hierarchy we could see there are "them and us" type of problems exist. Culturally, at SPPD, systems have been evolved in-house as a stand-alone basis for various departments - interfaces were restricted. Now, with the introduction of the IBS, there will be a conflicting win-lose situation. Individual vs non-SPPD personal biases... We need an independent power broker for cross functional integration.

8. In what sense do you think the SAP system is powerful?

Reply from HF: Because it is a successful company. The SAP system has been accepted by major companies worldwide. More modules offered as well as its' integration.

9. Can the SAP system be compatible with your TQC approach?

Reply from HF: TQC is a philosophy. It deals with including measurability, people's involvement, planning and standard procedures. TQC is a tool in which adherent a way of thinking can be enhanced for improvement.

Using the SAP system we can improve the measurability standard in controlling as well as decision making. For instance, trend analysis in SAP is considered as a continuous improvement approach. SAP system is certainly compatible with our TQC, not a substitute. SAP system can help in achieving TQC. It can be considered as means in improving our TQC system.

10. What important issues do you think to be considered in the general ledger (RF) area under this new implementation?

Reply from HF: We got to address about reporting at the business unit level. In version 5.0C, SAP is offering such functionality. Other issues are internal integration issues to the general ledger such as assets, accounts payable, and various sub-ledger to the general ledger.

11. In order to successfully implement your IBS what aspects do you consider most important?

Reply from HF: Most important aspect from the system's point of view is to identify the major integration points. It is very critical for the system implementation. We have to develop an integration manual.

12. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far you have...
overcome this problem? Do you see any communication problem among various functional owners?

Reply from HF: It would not be critical until the initial requirements are outlined. However, I have no comment on this.

13. Previously you were of the opinion for cutting interfaces and limit integration. Now you are going for more SAP modules - what are they?


14. What are the major business processes within RF - GL area?

Reply from HF: Journal entry processing, manual journal entry, recurring journal entry, accrual journal entry, Inter- company accounting, Financial statement preparation and printing, and tax handling including VAT.

15. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from HF: External to the project team - Yes, there are some. A bit disappointment... it is an on-going thing... They understand that it's a bigger project now, otherwise they would say a bit of jokes... People keen to get involved with the new system.

16. To you, what is a "cultural issue"?

Reply from HF: Peculiar to wok environment... Something is not transportable across... the department you work for... people's attitudes. Every department has their own environment, created norms and acceptable way of behaving.

17. After the implementation of the SAP system do you think will you be needing more people or the existing personnel can handle it?

Reply from HF: Directly after the implementation there will be a fewer people required. Currently in the general ledger area, for example, there are lots of manual works involved. After the implementation of SAP, the people who are involved with inputting the data will perhaps be less.

18. In this multidisciplinary project who do you think plays a major role?

Reply from HF: I think project manager plays a major role, especially IT development side for designing methodology and guidelines which we can get at various stages.

19. If you are involved with a project does it add any credit to your HR report?

Reply from HF: Not really. Probably a disadvantage because in project there is no hierarchy. Roles are taken over [or assigned] as they arise. After spending in a project for four years you stay in the same position. It helps you as an individual [gathering more knowledge in a system].

20. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from HF: It re-inforces accountants to shift away from the head office to the plant manager. In other words, more accounting to the users at source of the input points... more decentralisation.
21. Do you see any change of focus that future accountants need to be aware of?

Reply from HF: Future accountants need to be aware of many practical situations.

22. Are you happy with the current structure of the project?

Reply from HF: Seems to be OK. A major concern at this stage is integration issue. Some areas are looked to be understaffed and under resources such as engineering.

23. What sort of role do you think should SPPD play with IT in maintaining the system after the implementation?

Reply from HF: There will be a system administration group who will be represented from both BHP-IT and SPPD for technical and application support.

I thanked Mr Henry Fernandez. The interview ended at 3-10 pm.

Informal Interview with Mr David Kirton (a project member) on 18 September 1992 at 10-00 am: Venue - Warrawong IT Centre, Port Kembla.

[This interview was not tape recorded. It was written based on notes taken during the interview.]

1. When did you join in this project?

Reply from David Kirton (DK): I joined into the project in May 1992.

2. When did you join in BHP-SPPD?

Reply from DK: January 1987

3. What major areas were you involved in the project?

Reply from DK: I have been involved with the RK-S costing. I have involved with the integration issues between Maintenance management and costing. Previously I was involved with the costing aspects of the Tin Mills area. Now my major responsibility is to dealing with the RK-S costing area.

4. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial'? Do you think IBS can fulfil some additional requirements?

Reply from DK: I feel largely these requirements will be the same. IBS may fulfil in a wider sense. To me, it seems just change of terminology. People other than costing area do not like the term Cost Management System (CMS).

5. In what ways could you evaluate the works that have been carried out by the functional and conceptual design teams under the previous project structure?

Reply from DK: It was very important... Continual learning process. I don't think it was a waste of time. You got to build up things slowly. For instance, in many ways in the RK-S there is no need to change much.

6. Some argue that the project is yet in the "first phase". Could you please comment on this?

Reply from DK: We are re-visiting the first phase, so to speak. The scope of work is so large and complex, to view all of them at a glance is difficult. We have to ensure that
we see everything. We are now in the process of exploring requirement definition stage. Any way, I could say it is a first phase of the functional design stage.

7. Have you seen any political struggles (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from DK: We now started with Integrated Business System. Yet, we need to see any real evidence of political struggle such as Engineers vs Accountant. You see, if you speak to the Maintenance people they might say SAP system might not satisfy their all requirements. I have not seen any political struggle among senior members but that could well develop. Everyone wants the best system in their area. It can sometimes be negative for certain areas. It depends on the integration manager. There may exist biases. Senior management must have a good focus on that. We got functional owners - give a bit of time to see the potential.

8. In what sense do you think the SAP system is powerful?

Reply from DK: It's a Real Time system. It has facilities such as cost component splits and drill down to documents. Previously our capacity to feed information or providing the input was limited. Now we can provide or feed into the system in an integrated manner.

9. Can the SAP system be compatible with your TQC approach?

Reply from DK: It is compatible. It is a big step improvement to our TQC. In other words, information using the SAP system will facilitate or improve our existing TQC.

10. What sort of issues do you think important to be considered in the costing area under this new implementation?

Reply from DK: I consider the following issues are important from costing point of view - movement towards "Activity Base Costing", allocation problems need to be handled carefully which should be driven by the users. Fixed and variable costs split which is completely new to SPPD because previously no attempt had been made to do that.

11. In order to successfully implement your Integrated Business System what important aspects do you consider most?

Reply from DK: Integration - communication within various individual areas.

12. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far you have overcome this problem? Do you see any communication problem among various functional owners?

Reply from DK: There could be communication problem in the past with the previous project structure. Now, I think with the new direction of the project, with the guidance of Mr Jim Hall and Mr John Bown there is no such problem.

13. What are business processes? Are activities is distinct from business processes?

Reply from DK: "Activity" refers as "standard determinant" to SPPD, which is used to measure what cost centre does.
14. What would be the basis of treating fixed costs within the RK system? How will actual fixed cost be treated? Will it be distributed based on planned activity or actual activity within RK-S? How will variance be adjusted?

Reply from DK: [I have cited an example of the consequences of different allocation using SAP's allocation methods see notes - for my reference]. We need to look at this issue. Users and Finance expertise should make a decision about this.

15. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from DK: I would like to see this at two levels from the Finance and Planning point of view. At the user level - contempt for the new system, treating new system in contempt. Lack of knowledge of the system - unsettled at this stage. They preferred to stop SAP. At the management level, they are quite keen for the new system. They did not involve enough... ability to manage the business... will depend upon the knowledge of the system... learning SAP.

16. To you, what is a "cultural issue"?

Reply from DK: To me, in terms of this implementation... people's reaction, mentality, ie, people mind set... change of work place new focus.

17. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from DK: I think we would not be needing more people, existing people can handle that.

18. In this multidisciplinary project who do you think plays a major role?

Reply from DK: People in the senior team leader, say, Ms Kerry Reid. Not every one will accept this job. It is one of the most important area. In the past, this has been a problem..

19. If you are involved with a project does it add any credit to your HR report?

Reply from DK: I honestly believe that should be the case. From a personal point of view the knowledge I am gaining will lead my future opportunities - lots of personal benefits. In short term, one may not see the benefits but in long run it is certainly a benefit.

20. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from DK: Accountant can play an important role... They have to be knowledgeable about the system, which will dictate the ability of managing business processes.

21. Do you see any change of focus that future accountants need to be aware of?

Reply from DK: From a management accounting point of view... accountant should involve with operational system knowledge in business sense, that is, how business works - multi-disciplinary contextual knowledge. Here, for example, to hold a position at the managerial level you need to have work experience at least in two areas. Thus, multi-disciplinary knowledge or experience is important for accountant. Furthermore, computer literacy has to be taken for granted, no accountant will survive without...
computer knowledge. Information technology is very important. In future, management accounting job will be more decentralised at various levels.

22. Are you happy with the current structure of the project?

Reply from DK: Yes.

23. What role do you think should SPPD play with IT in maintaining the system after the implementation?

Reply from DK: Basically, system administration and uses help should perform by IT. SPPD should play the directional role... Obviously there are constraints of doing that.

I thanked Mr Kirton. The interview ended at 11-45 am.

Informal Interview with Mr Ian McCulloch (a project member) on 22 September 1992 at 10-00 am: Venue - Warrawong IT Centre, Port Kembla.

[This interview was not tape recorded. It was written based on notes taken during the interview.]

1. When did you join in this project?

Reply from IM: October 1991

2. When did you join in BHP-SPPD?

Reply from IM: In 1980.

3. What major areas are you involved in with the project?

Reply from IM: I am involved with RK-S cost centre accounting. Now I am involved with RA assets.

4. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial'? Do you think IBS can fulfil some additional requirements?

Reply from IM: I cannot think of anything extra. IBS would adopt the same. Of course, standalone costing system could not satisfy other business activities.

5. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from IM: I don't think it was wasted. The work that has been carried out under previous structure has got two major benefits. Lots of works that have been done in costing area only need a minor modification and therefore we could say it was a good foundation. We explored most business processes in costing area. Now we are looking forward to relating them with operational system units.

6. Some argue that the project is yet in the "first phase". Could you please comment on this?

Reply from IM: We are in one project. Some sections are in the first phase, others moving into the second phase. My understanding about the first phase is started with requirement definitions' stage. For the RK systems requirement definitions are mostly completed - moving towards functional designed stage.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
7. Have you seen any political struggle (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from IM: Undoubtedly... inevitable... conflicts are good. In the initial stage there exist conflicts. Basically, we have been through phases of organisational and interpersonal conflicts. We are moving towards minimising conflicts. At the initial stage there were few owners.

8. In what sense do you think the SAP system is powerful?

Reply from IM: Major benefits are integration, internal interfacing, real time and ability to pull information from different business areas.

9. Can the SAP system be compatible with your SPPD's TQC approach?

Reply from IM: Yes, TQC System is compatible. I have a doubt as to whether focus of accounting is compatible with TQC approach... TQC will focus controlling the process variables, where accounting system only focus an output of the system. I doubt also whether they are parallel... Management sophistication to adopt the TQC philosophies.

10. Why does it take long time to manage a change?

Reply from IM: We have not looked into the change management yet. It's a cultural issue. What is going to change, we are identifying those. Mapping what is going to change needs time and efforts. There are certain amount of complexity in identifying the object of change as well.

11. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far you have overcome this problem? Do you see any communication problem amongst various functional owners?

Reply from IM: I don't think we have hit those problems yet under the new structure. Under the previous structure it was not a problem within the Finance and Planning. Now with the increase in the project scope the ability to influence others such as Maintenance management and Supply, become a political issue. Thus, communicating with functional owners... and then, creation of action... a potential problem.

12. What are business processes? Are activities is distinct from business processes?

Reply from IM: Activity may be a sub-set of business processes. I don't see a great deal of difference between them. [I explained a case about overhead distribution methods that is available under SAP system, He supported my arguments and said,] ...this can create a problem, [that is, this can distort useful decision making information].

13. What would be the basis of treating fixed costs within RK-S? How will actual fixed cost be treated? Will it be distributed based on planned activity or actual activity within RK-S? How will variance be adjusted?

Reply from IM: We skip this question.

14. Have you noticed any behavioural implications amongst various users of the system at this stage?

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S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from IM: Yes, there are some. 'Standing apart from the system'... 'we have not been co-opted during the design'... 'specially Finance and Planning... partly worries ... career issue... the role of Finance and Planning occupation. Some plants' users like the system and have become enthusiastic for the system. They neither understand existing system nor understand the present one. They always feel it's an accounting system.

15. To you, what is a "cultural issue"?

Reply from IM: The way in which people view their work. Perhaps culture is driven by functional and work types. To lessen the impact of culture in an organisation there is a need for establishing a mix team from cross cultural perspective. For instance, Fixed Assets Accounting system is an accounting system, not an engineering system, but most of the work done in that area were by the engineers.

16. After the implementation of SAP system, do you think will you be needing more people or can the existing personnel can handle it?

Reply from IM: I don't think we will need more people. I would believe fewer people can manage it but they must be trained people, because of system integration and complex computer technology. People need a cross functional training.

17. In this multidisciplinary project who do you think plays a major role?

Reply from IM: I believe the steering committee plays the major role.

18. What sort of issues do you think should be considered important in the costing area under this new implementation?

Reply from IM: Perhaps the control of overhead costs - activity costing, that is, what driving the costs. Managing various types of projects. In my opinion, issues related to selling, product costing and asset accounting are important.

19. In order to successfully implement your Integrated Business System what important aspects do you consider most?

Reply from IM: Requirement definitions should be in place in time. Making sure people [users] requirements are fulfilled. Users should dictate the requirement definitions not the system by itself.

20. If you are involved with a project does it add any credit to your HR report?

Reply from IM: It must add some credit. But, how important it weighs up... sacrifice - potential advancement. You expect there should be some credit. Nothing has been mentioned to us.

21. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from IM: Accountants roles will change from number crunching to analysis. Most of the standard procedures of accumulating information time covered by the system [and thus, accountant will have more time for analysis]. Accounting will become more cross functional because of the introduction of Integrated Business System. More Management Accounting emphasis than Financial Accounting, where most of the financial accounting would be more standardise.

22. Do you see any change of focus that future accountants need to be aware of?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from IM: Yes, accountant should have to have cross functional focus and understand the business impacts for decision being taken.

23. Are you happy with the current structure of the project?

Reply from IM: Yes.

24. What sort of role do you think should SPPD play with IT in maintaining the system after the implementation?

Reply from IM: It is SPPD's system. They should dictate Information Technology. It is our system.

I thanked Mr McCulloch. The interview ended at 11-15 am.

Informal Interview with Mr Phil Sebbens (Phoenix 21 project member) on 23 September 1992 at 10-00 am: Venue - Warrawong IT Centre, Port Kembla.

[This interview was not tape recorded and was written based on notes taken during the interview.]

1. When did you join in this project?


2. When did you join in BHP-SPPD?

Reply from PS: I joined in BHP-SPPD January 1960 as a "Tradesman". I was ranked to an engineer for Estimating department in 1965. Since then I was working as an engineer.

3. What major areas are you involved in with the project?

Reply from PS: I am involved with Job Costing or Orders, RM-INST, RK-A, RK-P, and also RA Assets.

4. What major requirements drive your IBS development as opposed to the development of CMS? Do you think IBS can fulfil some additional requirements?

Reply from PS: [I could not take good notes on his response].

5. In what ways could you evaluate the works that have been carried out by the functional/conceptual design teams under the previous project structure?

Reply from PS: It provided us the working models. It showed us further limitations of work, work to be done and further design of requirement definitions. It made our work so easier [at this stage] to carry on. For instance, what we found from job orders... we realised that RK-A model is limited. Accordingly, we went for another module, say, project management. People want to sense the system works. They want to see it does this and that. For example, in our existing system, EWAS system, people did not know what they want unless someone showed it to them or prototype them.

6. Some argue that the project yet is in the "first phase". Could you please comment on this?

Reply from PS: It's funny! We are still in the first phase because of shifting the project direction from a stand alone CMS development to the IBS development. Now we
introduce new modules such as RK-P, Supply and Maintenance... whole range of "bull game". There are so many systems need to be interlinked... to be integrated - all have to come together.

7. Have you seen any political struggle (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from PS: Yes, there exist conflicts between engineering and Maintenance function - even though Maintenance is under Engineering. Now we are looking at developing separate organisation structure. Supply people are not worried about job numbers. So there exist organisational conflicts... because of different philosophy. Them and us conflict between Plant areas and Administration. In plant areas they are all engineers. They claim that 'we are in the real world'. They blame people in the administration.

8. In what sense do you think the SAP system is powerful?

Reply from PS: Integration, real time and data at source.

9. Is SAP compatible with your SPPD's TQC approach?

Reply from PS: TQC philosophy is a continual improvement by small step. After the implementation we will get back to the TQC. We are now fulfilling (1) documentation, (2) standard procedures and (3) standard cost elements. People's job will change. It will be a fresh start - job number and cost element issue.

11. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far you have overcome this problem? Do you see any communication problem between various functional owners?

Reply from PS: The IBS should reduce interfaces, which is common problem in three areas such as Finance, Supply and Maintenance. We need to make sure we are one team. I would expect our new structure would overcome that.

12. What sort of issues do you think should be considered important for the area of maintenance and assets management under the installation of SAP system?

Reply from PS: Job Number structure.

13. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from PS: People resist to change. They say, "we know AREMIS [an engineering system]. Why SAP?" They do not want SAP. Sometimes, fear, that it would be a common good.

14. To you, what is a "cultural issue"?

Reply from PS: Understanding job numbering system for project management area by the users is a cultural issue. Previously they used different numbering system, now they will be using SAP's numbering system.

15. In this multidisciplinary project who do you think plays a major role?

Reply from PS: I think Finance and Planning plays a major role, because dollars are the main focal point... makes the world go around.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
16. If you are involved with a project does it add any credit to your HR report?

Reply from PS: No. From an individual point of view there are gains such as computer literacy, presentation skill, understanding the entire system and intrinsic self-fulfilment.

17. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from PS: Accountants should understand how to audit the system - system audit. Business area will be autonomous and, therefore, management accountant will play a major role in those areas.

18. What Major roles do you think will engineers (including IT people) play in future under the proposed system implementation?

Reply from PS: Instead of being pre-occupied with cost and expenditure, they will be able to concentrate on operational functions such as project management and others. Previously Capital Cost System (CCS) pre-occupied with the commitment information which created an extra time lag while communicated between the people of CCS and engineers. Now information will be at user desk.

19. After the implementation of SAP system, do you think will you be needing more people or can the existing personnel can handle it?

Reply from PS: Eventually the existing people will handle it. Integration will save duplication of data. It will facilitate users to concentrate on their own business processes.

20. In order to successfully implement your Integrated Business System what aspects do you consider most important?

Reply from PS: (we skip this question)

21. Are you happy with the current structure of the project?

Reply from PS: Yes. But I am not happy about the structure of the cross functional team in RA Assets Accounting area. We found RA is extremely involved with RF general ledger area. Thus, I feel in the team there should be some accountants but at the moment we don't have any... How to define an asset which is a problematic area.

22. What sort of role do you think should SPPD play with IT in maintaining the system after the implementation?

Reply from PS: Information Technology should look at the following: input system development, system efficiency, response time for batch processing, archiving data. SPPD should design their reporting system.

I thanked Mr Sebbens. The interview ended at 11-15 am.

Informal Interview with Mr David Prior (a project member) on 24 September 1992 at 10-00 am: Venue - Warrawong IT Centre, Building 1, Conference Room no 2, Port Kembla.

[This interview was not tape recorded and was written based on notes taken during the interview.]

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
1. When did you join in this project?


2. When did you join in BHP-SPPD?

Reply from DP: In January 1983. I was an electrician for four years, then worked in the communication area of IT (Information Technology) for three years. Then back to SPPD's Finance department, where I worked for about two years and a half.

3. What major areas are you involved in with the project?

Reply from DP: I am involved in the following areas of the project: RK-S cost centre accounting and RK-D process costing.

4. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial'? Do you think IBS can fulfil some additional requirements?

Reply from DP: I still believe IBS will fulfil the same objectives, but an involvement of more disciplines can fulfil those objective more fully.

5. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from DP: My opinion is that it has not been a total waste of time.

6. Some argue that the project yet is in the "first phase". Could you please comment on this?

Reply from DP: I think the first phase has not been communicated well yet. There is no agreed view - lack of communication... What constitute the whole project. How they interpret it... the project development is dependent on that.

7. Have you seen any political struggles (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from DP: I do. I believe we have to identify "them and us" conflicts both within and among various departments such as Maintenance, Finance and Supply. Every department has their own philosophy and have some strong people... their thought... alternative ideas - struggles. Personality differences and solutions... should be highlighted... to be open - "power" and "personality" conflicts. Some strong individual always preferred to do things in their own way. We should communicate and share our ideas for a common goal - then only we could get a successful business system.

8. In what sense do you think the SAP system is powerful?

Reply from DP: The SAP system's data validity and integrity (integration)... checks and balances... are very good. It's an on-line real time system... Our existing DISC system only focused on the financial aspects... The plant people interested in data at source...

9. Can the SAP system be compatible with your TQC approach?

Reply from DP: Very much so. I believe our TQC program will benefit if we can implement the SAP system. KPI, customer department performance, Suppliers [value chain]... it all depends how we implement them, how well we define the requirement
definitions. The teams we have now are not enough. We need a lot more input. SAP has defined everything... has all the functionality to achieve our TQC.

10. Why does it take long time to manage a change?

Reply from DP: It's incredible. Negative attitude... people resist change. They want stick out from crowd. Plant personnel are reluctant. Maintenance having a big clung. They are only focussing on their own areas. They might not see the benefit of the business as a whole... Some senior cost officers also resist this project implementation.

11. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Have you seen any communication problem between various functional owners?

Reply from DP: At the moment the major problem area is Maintenance management, purely because of the amount of change required. Of course, there is a question what is the nature of change - short term or long term. In the case of supply, it all depends on what modules they are going to buy or implement. We still think that we would need interfaces for example between petty cash and manual journal entries. We may not see immediate benefits but in the long run we will benefit from the installations of the SAP system.

12. What are business processes? Are activities is distinct from business processes?

Reply from DP: In SAP the term 'activity' is referred for a three letters acronym. Business processes follow certain input to get certain required output in all areas of business functions. It is important to look at output - an output can have different processes or a single process.

13. What would be the basis of treating fixed costs within RK-S? How will actual fixed cost be treated? Will it be distributed based on planned activity or actual activity within RK-S? How will variance be adjusted?

Reply from DP: I explained a situation of anomalies and effects in the use of overhead distribution methods in a SAP system environment. I raised the consequences for using the methods such as 'assessment', 'pre-distribution' and 'activity based' allocation methods. He did support my explanations.

14. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from DP: Yes. I have. Financial people's attitude at this moment is that they say, "its a joke - big flop!". "Something like a black hole", never taken seriously.

15. To you, what is a "cultural issue"?

Reply from DP: To me change of business practices are cultural issues. Today what we do and tomorrow what we will be doing - is a cultural change.

16. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from DP: I believe in the long run we will be needing fewer people.

17. In this multidisciplinary project who do you think plays a major role?
Reply from DP: We have a few power places such as BHP-IT, Finance and planning, and Key functional areas. All these areas will play a major role in the implementation of the IBS project.

18. What sort of issues do you think should be considered important in the costing area under this new implementation?

Reply from DP: We are coming with some good ideas. Fixed and variable split is an important issue. We need to go through the ABC technique of costing. Setting reporting structure - what information business needs, which have to be identified through the phase of the 'business requirement definitions'.

19. In order to successfully implement your IBS what aspects do you consider most important?

Reply from DP: I believe, communication between the teams is very important. Having people with "drive and imagination" - not just replicating but looking for improvement - are important aspects.

20. If you are involved with a project does it add any credit to your HR report?

Reply from DP: I think from an individual point of view project like this is always a big 'plus', because there are massive markets for SAP knowledge. So, it is always a credit to an individual.

21. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from DP: I think we are moving towards a more "business type analysis". More analysis, more interactive role and intermediary role... focus on new costing methods for future management accountants.

22. Do you see any change of focus that future accountants need to be aware of?

Reply from DP: They need to focus more on understanding the "business", the "market", "costing strategies", computer knowledge and "how to work as a group". Also, accountants need to be knowledgable in preparing business process flow chart, complex system context diagram and in presentation skill.

23. Are you happy with the current structure of the project?

Reply from DP: Not really. I just think at present we have too many levels. The more teams you have there is a possibility of breaking down of communication chain.

24. What role do you think should SPPD play with IT in maintaining the system after the implementation?

Reply from DP: SPPD's monthly procedure... They will request for change... evaluation... simple reporting ABAP... technical support... writing complex ABAP. They will work as trouble shooting... maintaining capacity updates... interfacing requirement with PCs, updating SAP's new release.

I thanked Mr Prior. The interview ended at 11-30 am.

Informal Interview with Mr Vince Laina (a project member) on 25 September 1992 at 1-00 pm: Venue - Warrawong IT Centre, building 1, King Street, Port Kembla.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
1. When did you join in this project?

Reply from Vince Laina (VL): I joined this project in May 1991.

2. When did you join in BHP-SPPD?

Reply from VL: I joined in BHP-SPPD December 1979 at the accounting department.

3. What major areas are you involved in with the project?

Reply from VL: I am involved with Labour costing and Job order costing.

4. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial'? Do you think IBS can fulfil some additional requirements?

Reply from VL: To me, IBS development is a divisional focus. Whereas the development of the CMS would have been a specific focus on the costing and finance area only. IBS has expanded its scope to incorporate other areas.

5. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from VL: It enhanced our understanding what we do today and what we will be doing tomorrow. We looked at what could be an ideal situation. We looked at SAP and its functionality including ABAP/4 for interfaces. We also tried to work out the cost impacts. The works definitely made users' consciousness of the Phoenix 21 project. In other words, it opens up users' mind. In many areas we will not do any extra work.

6. Some argue that the project is yet in the "first phase". Could you please comment on this?

Reply from VL: We have taken a strong backing - we wanted IBS. From IBS point of view it is a first phase.

7. Have you seen any political struggle (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from VL: No. From project team point of view - we are all focused towards achieving the same goals - under the project director Mr John Bown.

8. In what sense do you think the SAP system is powerful?

Reply from VL: It is powerful because of its comprehensive ability to integrate the entire information system, having information right at source... quicker access... real time. Of course, real time may be dependent on the process.

9. Can the SAP system be compatible with your TQC approach?

Reply from VL: I am not sure whether we had an ideal project procedure. However, TQC approach is broadly applied. It would be a continuous improvement. One of the TQC principles is customer satisfaction. Through installation of SAP system we are trying to improve that situation. It would be an on-going development for many other areas such as standard procedures and standard documentations.
10. Why does it take long time to manage a change?

Reply from VL: One of the main reason is that we are focusing on the development of the IBS rather than the development of a stand alone CMS. It is a big change in direction. Reviewing such a change takes time. It is a change which focused on the entire division, not any stand alone case.

11. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem between various functional owners?

Reply from VL: Now, we have one project. Every body has to satisfy at one time.

12. What are business processes?

Reply from VL: Business processes are flow of information.

13. What is the reason for not purchasing SAP's Human Resource modules?

Reply from VL: A decision will be made after the requirement definition in this respect. HR has two components: People management and Payroll management. How are we going to deal with the HR, which yet is to be clarified.

14. Could you please provide a brief overview on your existing labour costing and payroll system?

Reply from VL: Our extant system consists of (a) Mainframe attendance system and (b) Payroll system. Mainframe attendance system collects the information from shopfloor then feed automatic into the payroll system. One of the main purpose of labour costing is to capture costs. Currently they are two separate systems. We are looking forward to have one entry at source that what will happen when we install SAP system. We might create feeder system for interfacing with OLT.

15. What sort of issues do you think should be considered important in the labour costing and payroll area under this new implementation?

Reply from VL: I think our main thrust would be to create one entry at source for both labour costing and job costing purposes.

16. In order to successfully implement your IBS what important aspects do you consider most?

Reply from VL: Ultimately it would be a mean for improvement, to manage better way.

17. To you, what is a "cultural issue"?

Reply from VL: A cultural issue can be explained as to how employees perceive things here. An example may be, you see, we have an annual leave loading system first introduced in 1972. The law was for certain benefit for particular disadvantaged group. Now everybody thinks it is their right to spin-off, every one gets annual leave loading. It becomes a culture. They say, 'I am entitled to have annual leave loading bonus'. Another example is local government sick leave - entrance into the workforce - they should get all the time... all these issues are becoming cultural issues.

18. Have you noticed any behavioural implications amongst various users of the system at this stage?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from VL: Do you mean people outside the team. They do not know what is happening here. They could not therefore know how it will effect them. Changes of job structure could be a fear. Change always concerned to some people, is it not? I have not directly experienced such issues, I believe it is a concern to us.

19. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from VL: I don't know. It is very difficult to predict. It will depend on how our work scope enhances.

20. In this multidisciplinary project who do you think plays a major role?

Reply from VL: It is a team role rather than any individual role. Good team - working together - you cannot afford to work in isolation in a project like this.

21. If you are involved with a project does it add any credit to your HR report?

Reply from VL: I believe, it would be a personal development, larger benefit from personal point of view. Of course, a broad range of focus - this however flows in to your HR record.

22. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from VL: Accountant will do less number crunching rather more analysis. There will be some new specialised areas such as production reporting and costing systems under new implementation.

23. Do you see any change of focus that future accountants need to be aware of?

Reply from VL: We are moving away from number crunching and becoming to take a more management type role. Produce reports and analyse them and managing them... progress with technology.

24. Are you happy with the current structure of the project?

Reply from VL: I have no problem with the current structure.

25. What sort of role do you think should SPPD play with IT in maintaining the system after the implementation?

Reply from VL: IT will continue to implement SAP in other divisions of BHP. IT would be a preferred installer and will involve with consultancy in this respect. We as a division if face any problem we could refer that to IT.

I thanked Mr Vince Laina for his cooperation. The interview continued for an hour.

Informal Interview with Ms Amanda Shain (a project member) on 29 September 1992 at 10-00 am: Venue - Warrawong IT Centre, Building 1, King Street, Port Kembla.

[This interview was not tape recorded. The following conversations were written based on notes taken during the interview.]

1. When did you join this project?

Reply from Amanda Shain (AS): I joined this project in June 1991.
2. When did you join IT?

Reply from AS: I join this project in September 1978.

3. What major areas are you involved in with the project?

Reply from AS: At the moment I am involved with labour costing, identifying the needs for feeder system interfaces and job order costing.

4. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements - 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from AS: I don't think the CMS development project could foresee these benefits, especially the strategic and operational requirements. We are in a position of defining business processes... IBS can actually fulfil all these objectives fully.

5. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from AS: It benefited us. It was a learning process. It led us to change the direction of the project. It familiarises SAP system. It allows us to review the potentiality of SAP system. Although lots of re-work would be needed, it showed us what to customise and change to what. We now included more modules. It can be considered as bench marking work.

6. Some argue that the project is still in the "first phase". Could you please comment on this?

Reply from AS: It is a first phase only to those additional modules we decided to add. The project now is different from the CMS project... differently phased... 'Big Bang' approach. It is not an easy task to get acceptance from plant areas... People are skeptical about the SAP system.

7. Have you seen any political struggles (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from AS: Yes. It is because of personal ambitions. In one area people feel that they can influence others. In other areas, for example, Finance and costing people feel that they have the knowledge on SAP and, therefore, they can influence others. Maintenance area may feel that the SAP system might not fulfill all the requirements they need and, therefore, asserts that benefits of the entire requirements to the business would be limited.

8. In what sense do you think the SAP system is powerful?

Reply from AS: It's a flexible package. It's a table driven as well as parameters driven system. SAP's ABAP/4 [a fourth generation language] is powerful for customisation and screen painter.

9. What aspects of standard documentation procedures of IT could you equate with the standard documentation procedures of SPPD's TQC approach?
Reply from AS: They are very similar. With TQC - let's write standard procedures - review and improve those rather than just changes in the shop floor areas. With TQM - next improvement - top to bottom - managers are dedicated reviewing improving measurement and control technique. IT will look specifically the computer technology application.

10. Why does it take a long time to manage a change?

Reply from AS: Because people are reluctant to change or commit themselves. They want to see "things" first. We have seen through an interview response as initial costing system review where it was indicated that... business is changing - there is a high risk involved in change if not done properly.

11. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem between various functional owners?

Reply from AS: To an extant, the SAP system is a modular system. One can progressively implement them. An ideal situation would be to install all of them together. Maintenance would go progressively.

12. What are business processes?

Reply from AS: I see them as steps involve to get things done in different areas of the business.

13. What is the reason for not purchasing SAP's Human Resource modules?

Reply from AS: I believe that SAP has recently promoted version 5.0C. At the moment, SAP's payroll does not suit Australian standards. We have different requirements in Australia than what is the standard functionality the SAP system has. SAP's HR is not well integrated as expected. Although SAP develops country specific HR system, yet one to be develop for Australian market.

14. Could you please provide a brief overview of SPPD's existing labour costing and payroll system?

Reply from AS: Existing labour costing was on monthly basis. Rate is calculated by the average actual rates, then applied to budgeted hours... No control, only the average version. Our Labour costing is integrated with superannuation, compensation, HR, OLT through to Melbourne. Staff payroll system deals with salaries for fortnightly and monthly employees. Wages payroll system is developed in 1986 from a batch system to an on-line system.

15. What sort of issues do you think should be considered important in the labour costing and payroll and interface area under the new implementation?

Reply from AS: Job costing and Labour costing should be integrated. Currently they are two separate systems.

16. In order to successfully implement your Integrated Business System what important aspects do you consider most?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from AS: Change management is a very important issue, especially users' acceptance (plant area users). It would not be successful unless we have the acceptance, users' belief in the system. Identification of the true requirement is very important, so that we can design appropriate system and gather benefits.

17. To you, what is a "cultural issue"?

Reply from AS: An example would be... "change to current working practice philosophy", "change of responsibilities" and "decentralising the input of the data". Lots of people don't understand running the business information system.

18. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from AS: An area that is known to me is cost office. They are anxious what would be their future role in managing the business information system.

19. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from AS: No, there won't be as many.

20. In this multidisciplinary project, who do you think plays a major role?

Reply from AS: The main players are functional system owners. They are the representatives from SPPD. It is their system. Finance people got the knowledge exposure.

21. If you are involved with a project does it add any credit to your HR report?

Reply from AS: Yes, if it is successful. Generally work experience is reflected through one's HR report.

22. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from AS: They should be looking at improving the system. Change in their way of thinking about analysing data on real time basis.

23. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from AS: They will give technical support. It is very important that system run properly. They will be playing a monitoring role. Of course, they would be continuously investigating how to improve the system. There would be a joined support team to look after the system.

24. Are you happy with the current structure of the project?

Reply from AS: Yes. My only suggestion would be that IT should have a dominating role in leading the teams because of our experience with the project management. I believe this would save a lot of SPPD's time.

25. What sort of role do you think IT should play with SPPD in maintaining the system after the implementation?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from AS: Technical support group - improve the system - continual improvement - that is a part of TQM philosophy.

I thanked Ms Shain. Our discussion continued till 11-20 am.

**Informal Interview with Ms Pia Hawkins (Phoenix 21 project member) on 30 September 1992 at 10-00 am: Venue - Warrawong IT Centre, building 1, King Street, Port Kembla.**

(This interview was not tape recorded. The following conversations were written based on notes taken during the interview)

1. When did you join this project?

   Reply from Pia Hawkins (PH): I joined this project two years ago in 1990.

2. When did you join IT?

   Reply from PH: It was the same time I joined BHP-IT.

3. What major areas are you involved in with the project?

   Reply from PH: Now I am involved with General Ledger and BARS. BARS is our corporate reporting system. It has a lot of interfaces with various systems.

4. What major requirements drive the development of your IBS as opposed to CMS, where it is stated that in SPPD CMS development is driven by three main requirements - 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

   Reply from PH: Yes, CMS is driven by three. IBS would focus more on integration. IBS would facilitate in getting the benefits of entry in one point. IBS can fulfil in a full scope all these three requirements in a broader scale.

5. In what ways could you evaluate the work that has been carried out by the functional/conceptual design teams under the previous project structure?

   Reply from PH: [She did not reject the works that was done by the previous team. Rather, she supported the view that lots of works being accommodated by talking to people. She has given an example about taxation requirements how the proposed system is different from the current.]

6. Some argue that the project is still in the "first phase". Could you please comment on this?

   Reply from PH: From the system development cycle point of view, we are still trying to work out what is our requirement definitions are going to be. What people we want? Our next phase is functional design. If scope changes then we have to look back at the requirements.

7. Have you seen any political struggles (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from PH: The major one - struggle of ownerships of packages, that is, who owns it - Finance and Planning or IT. SPPD is trying to manage the system development without IT people or without experience in systems... Accountant has managerial experience but not under the umbrella of computing world. Lot of managers in the plant has been burnt... you got to have proper people with right experience. Managing people (people using the system) is different from managing computers (equipment, hardware and software).

8. In what sense do you think the SAP system is powerful?

Reply from PH: Because of its integration... information moves between and within the systems... data at source and real time information. At this point in time you cannot get a system which is totally integrated with other systems. SAP has a power of integrating differing business applications.

9. What aspects of standard documentation procedures of IT could you equate with the standard documentation procedures of SPPD's TQC approach?

Reply from PH: TQC is very similar to IT's TOM. TOM is a next generation of TQC. Computing industry has a creditation standard as compared to quality control standard of TQC. Philosophically they are both looking at improvements.

10. Why does it take a long time to manage a change?

Reply from PH: Because people don't like change and subsequently it takes long time. In addition, change is dependent on the extent of change (scope of change). Changing big lifestyle needs a plan. For a major change like this requires time, otherwise it would be a big catastrophe. Educating people earlier in the project... re-orientation and re-organisation, etc... has to be handle carefully.

11. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem between various functional owners?

Reply from PH: They tried to overcome this. We welcome for deliverables... effort to make everybody at same point. Yes, that's still a problem. It always happens in installing a big system. Communication does play a major role. They are trying to improve communication by centralising the people and functional owners into one hierarchy... bringing project leader as the functional owners. Functional owners have to sign off the requirement definitions.

12. What are business processes?

Reply from PH: Business process is a process, which is a step by step description given certain input and output, which assist in performing a task and in satisfying business goals. The users don't know at this stage what are business processes that they have to understand under the proposed system implementation.

13. What is the reason for not purchasing SAP's Human Resource modules?
Reply from PH: Because SAP’s HR modules are recent and it is "country specific". Unless there is a demand for it, at a certain later date, I think we are not buying it.

14. Could you please provide a brief overview of SPPD’s existing labour costing and payroll system?

Reply from PH: Sorry, I don’t know much of it.

15. What sort of issues do you think should be considered important in the labour costing and payroll and interface area under the new implementation?

Reply from PH: [we skip this question]

16. In order to successfully implement your Integrated Business System (as a whole) what aspects do you consider most important?

Reply from PH: Interface issues are very important. Previously we had a lot of problems concerning interface issues. We are trying to overcome this problem. When we will be heading for detailed design I suppose this would be a problem. Thus, SAP’s integration has to be handled carefully. In addition, management support - communication at all levels both internal and external might be required.

17. To you, what is a “cultural issue”?

Reply from PH: Cultural issue is the change. A successful implementation of change is dependent on how people accept change at a particular point in time, such as, change of work practices and scope. Change is also dependent on the age of the work force - this relates to people attitudes. For example, in Maintenance most people are long serving people in comparison to other departments. Therefore, this age class formed a specific class.

18. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from PH: I have experienced that they have lots of confusions. They know only what they have been told. The people I talked to seems to be pleased but those who have never been told it seems they are feeling a threat of change.

19. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from PH: I don’t know. Hopefully the existing people can manage.

20. In this multidisciplinary project, who do you think plays a major role?

Reply from PH: Management - immediate project leaders and the director of the project. Now there seems to be some clash between IT and Finance and Planning. However, it is inherent.

21. If you are involved with a project does it add any credit to your HR report?

Reply from PH: It does. Because our HR performance appraisal system does take one’s performance into account. Of course, if the project is successful then good rating, yes.
22. What major roles do you think will accountants play in the future under the proposed system implementation?

**Reply from PH:** So far, accountants have been playing a major role in this project and they will continue to do so. Although there will be some re-organisation of desk such as clerk will move down to the source of entry, they will play a supervisory role and responsible for cost centre... will provide information for future planning and forecast, etc.

23. What major roles do you think will IT people play in future under the proposed system implementation?

**Reply from PH:** Technically, the technical support group, which is at present leading by Rodney Winbank will meet the software requirements, produce ABAP/4 report and updating the system if required. But we don't know who is going to be the leader of the group after the implementation. IT is looking forward to be a preferred installer of SAP for other BHP's divisions as well as for external customers.

24. Are you happy with the current structure of the project?

**Reply from PH:** Yes, I am happy. Best one have not seen yet than this.

25. What sort of role do you think IT should play with SPPD in maintaining the system after the implementation?

**Reply from PH:** [we skip this question.]

26. We had some verbatim conversations on some of the major issues in RF general ledger area such as: Who can post journal entries? Whether data input would be centralised or decentralised? What should be the design of users' authorisation and validation? Whether it would be built in system validations or not? Some points (for my reference): management has to build "procedure control" - user ID- validation to check account - cross validations - blocking of account - who for what and when to block accounts - ledger administrator - centralisation of control of accounts - proper controlling issues.

I thanked Ms Pia. The interview continued for an hour.

**Informal Interview with Mr Bill Wong (Phoenix 21 project member) on 30 September 1992 at 1-00 pm.: Venue - Warrawong IT Centre, building 1, King Street, Port Kembla.**

[This interview was not tape recorded, which was written based on notes taken.]

1. When did you join this project?

**Reply from Bill Wong (BW):** I joined this project in May 1992

2. When did you join SPPD?

**Reply from BW:** I joined BHP-SPPD in 1970. I have been working with the Maintenance engineering field for last four years.

3. What major areas are you involved with the project?

**Reply from BW:** I am involved with the RM-INST Maintenance management system.
4. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements - 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from BW: It is still looking forward to the same as you stated but in a more efficient manner.

5. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from BW: It did not cover all areas.

6. Some argue that the project is still in the "first phase". Could you please comment on this?

Reply from BW: For certain module it may be a first phase. In my opinion RK-A job order costing, for example, has been well passed the first phase.

7. Have you seen any political struggle (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from BW: There are conflicts, we need to solve them. It is obvious, because we have not yet passed the first phase of the project development. The scope of the project is bigger now.... controlling the information system, that is, who owns the eventual data is an issue which can raise a lot of conflicts amongst various functional owners.

8. In what sense do you think the SAP system is powerful?

Reply from BW: It will facilitate updating information rather than what we have now. Our costing information is now two to three months old. We can have quick access and integrated facility with the proposed system.

9. What aspects of standard documentation procedures of IT could you equate with the standard documentation procedures of SPPD's TQC approach?

Reply from BW: They are different approach. IT uses their own terminology.

10. Why does it take a long time to manage a change?

Reply from BW: SAP does not give a solution. It provides different functionality. We got to work out solution and implement the solution. We have to convince all the users and show them what are the best way of doing things, then transferring all the data from existing system to the proposed system... Master data transfer... big volume of data, not an easy task. You may not always get a best fit, making sure in changing master data are performed correctly. Training the users support... it is a huge task and requires a lot of time.

11. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem between various functional owners?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from BW: The costing team is ahead. In Maintenance we have a late start. If someone is slow we need to help them. Each functional owner will try to his/her best to improve their own functions.

12. What are business processes?

Reply from BW: How we carry out our business. Descriptions of what data we need, when we want them, how we want them and what format we want them.

13. Could you please provide a brief overview of the SPPD's existing Maintenance management costing system?

Reply from BW: In our existing system we used to feed information indirectly via interfaces. For contract services we have a manual system. Service shops had a different stand alone system. (Mr Wong drew a diagram to show the interfaces of the existing Maintenance management systems - see notes for my reference only)

14. What issues do you think to be considered important in the area of Maintenance management under the new implementation?

Reply from BW: Control of job costing and efficient use of resources are important.

15. What SAP modules are you purchasing for the Maintenance management area?

Reply from BW: We are buying the RM-INST and RK-A modules.

16. In order to successfully implement your Integrated Business System (as a whole) what aspects do you consider most important?

Reply from BW: I believe everybody should have equal level of understanding of data, which should carry same meaning to everyone. For example, do everybody understand the meaning of "routing"? Familiarising with terminologies... knowledge of other functions... communication is important.

17. To you, what is a "cultural issue"?

[We skip this question]

18. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from BW: I have seen some. People are worried about "what it (the system) will mean to them". It is a "black box".

19. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from BW: We will need fewer people.

20. In this multidisciplinary project, who do you think plays a major role?

Reply from BW: Finance people. They are the one who started first and given the "initial kick". They think everything runs around costing system.

21. If you are involved with a project does it add any credit to your HR report?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from BW: I don’t know. If one involved with project it enhances personal knowledge profiles.

22. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from BW: They will not have direct control. They will be involved more in analysing activity input.

23. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from BW: They will fine tune the system... make the system run... will looked at response time of the system and its efficiency.

24. Are you happy with the current structure of the project?

Reply from BW: So far, no complaints... I can see some problems in interface area...

I thanked Mr Wong. The interview continued till 2-05 pm.

Informal Interview with Mr John Bown (the Project Director - Phoenix 21 IBS Project) on 1 October 1992 at 10-00 am: Venue - Warrawong IT Centre, building 1, King Street, Port Kembla.

[This interview was not tape recorded. The following conversations were written based on notes taken during the interview]

1. When did you join this project?

Reply from John Bown (JB): I joined in this project on 6 July 1992

2. When did you join in BHP-SPPD?

Reply from JB: I joined in BHP-SPPD in 1986 as an executive of the public affairs department.

3. What major areas were you involved in before joining this project?

Reply from JB: I came from BHP's head office, Melbourne, where I was working in the department of corporate public affairs. My main role was to look after employee communication and special projects. My educational background is in the area of journalism and public relations.

4. What emphasis have you given in structuring the present structure of the IBS project?

Reply from JB: I have established a clear project management structure bringing the functional owners and teams to a workable arrangement. I developed the team concept by establishing team hierarchy at each level. Now, people have greater responsibility and clear set of guidelines in the project. I have developed closer working relationships among BHP-IT, project teams, SPPD’s functional owners and corporate management. I have given an especial emphasis on "team work".

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
5. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements - 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from JB: Yes, it gives us an IBS that's important. It will provide cost advantage, planning advantage and will provide management with greater range of information on a real time basis and more quickly than in the past.

6. In what sense do you think the SAP system is powerful? What SAP modules have you decided to purchase?

Reply from JB: We have not taken the purchasing decision yet. It will depend on our requirement definitions. We are at present in the process of prototyping requirement definitions' stage. We are looking forward to a full range of SAP's financial, supply, costing, engineering and HR modules. On 20 October 1992 we are going to decide whether we will be going for SAP's HR modules. However, any purchase decision will be made by the next March when we will complete functional design of the proposed system implementation.

7. In what ways could you evaluate the work that has been carried out by the functional/conceptual design teams under the previous project structure?

Reply from JB: It was basically emphasised on financials only. However, they have done some good work. We are re-visiting them. Also, we are looking at the applicability of those under SAP version 5.0c.

8. Some argue that the project is still in the "first phase". Could you please comment on this?

Reply from JB: Yes, it is because of integration factor and going for version 5.0 and R/3.

9. Have you seen any "political struggle" (including interpersonal and organisational conflicts) among various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from JB: Yes, there have been potential political part in the project. Slightly, it all to do with change. It is because some were certain about SAP. For others it does not answer their every problem. Some still use PCs. When we will approach functional design we would be able to better understand change...

10. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem between various functional owners?

Reply from JB: Communications between functional owners are not a problem. They have been given enough time to schedule... No, I suppose there will be no delays.

11. In order to successfully implement your IBS what aspects do you consider most important?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from JB: I feel the most important of all is to train the end users. It is most of our headaches. The total estimated personnel to be trained is about 3,000. We are reasonably confident using some of our information technology assistance and using some other experienced companies such as Boyne Melters in Queensland, can conduct effective training that will be in place in 1993. Training is a vital for change management.

12. After the implementation of SAP system do you think will you be needing more people or the existing personnel can handle it?

Reply from JB: In order to re-structure a provision may need to be made for technical and training side. There will be jobs after 1994... SAP improvement project will continue.

13. In this multidisciplinary project, who do you think plays a major role?

Reply from JB: I am as a project manager have a major role in bringing all the aspects and people together as well as control costs. Mr Kas Zoszak heading up IT and plays major role, as does our implementation and training manager. Functional owners also play major roles.

14. To you, what is a "cultural issue"?

Reply from JB: Producing steel is our culture. Change is a culture. A new direction is a change. This project is a new direction of a cultural change.

15. What aspects of the standard documentation procedures of IT could you equate with the standard documentation procedures of SPPD's TQC approach?

Reply from JB: I don't actually accept that there is a different TQC for different divisions. There got to be one TQC throughout BHP. Both of us have standard procedures. IT is a supplier of certain products we are customer. Overall BHP's TQC cover both of us. We have similar TQC approach, which is a big plus.

16. Why does it take a long time to manage a change?

Reply from JB: It is all to do with people and culture. There is always resistance from people. It is seen that it is very hard to change the "middle management". In some areas of the steel works it is also very hard to change... it is a matter of industrial relation. These days you cannot just change things immediately, so many accounts need to be considered. Employees do not want to "write short"... Change is a problem everywhere.

17. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from JB: I think that the implementation of new system will change the way we do things here. Accountants are part of the whole. The system should make their job easier. However, they will always have the key role to play in the management of business.

18. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from JB: IT people have to monitor change such as version 5.0c. It is up to them to inform SPPD about any update. It seems there will be a licence agreement for working with steel group by IT Port Kembla. IT people will continue to both local and broader level
engages in monitoring and developing the best system. BHP-IT is one of the recognised supplier and preferred installer in Australia for SAP system. They are looking forward to extend their business in South East Asia... They have to play up front role.

19. What major roles do you think will different functional owners (including engineers) play under the proposed system implementation?

Reply from JB: [Mr John Bown rather emphasised how IBS will revolutionised BHP's information system, improve their maintenance and engineering system and supply areas. Where he mentioned that supply is a key area for overall BHP steel group. He further stressed that the same system in overall BHP would resulted in tremendous benefits.]

20. Could you please give a brief overview of the communication procedures between the project team and higher level management authority?

Reply from JB: Both upward and downward communications are organised by myself. For downward communication we have a very clearly defined tasks. What we got to make sure is that information flow through both the upper level and lower level. We have a small group of steering committee from senior management including some of us from the project team. Once we finish requirement definitions by the end of this month, Kas and I will report this to the steering committee. We have a good communication procedure not only within SPPD but all through the BHP group and throughout the corporate BHP. I am a computer illiterate and, therefore, neutral for both the parties (laughter!) such as accounting and computing. Selection of modules they have to decide what we require.

I thanked Mr Bown. The interview ended at 11-00 am.

Informal Interview with Mr D Rouse (a project member) on 6 October 1992 at 2 pm:
Venue - Warrawong IT Centre, Building 1, King Street, Port Kembla.

[This interview was not tape recorded. The following conversations were written based on notes taken during the interview]

1. When did you join this project?

Reply from David Rouse (DR): I joined this project in November 1991.

2. When did you join IT?

Reply from DR: It was in June 1989 when IT was first formed by re-structuring computing department of SPPD and SCPD (Sheet and Coil Product division).

3. What major areas were you involved in before joining this project?

Reply from DR: I was engaged in implementing payroll packages for S&CP division and personnel systems for BHP-IT, Prot Kembla.

4. What major areas are you involved with the project?

Reply from DR: I am involved with Maintenance management and project management with Kas (project manager development), especially developing methodology for

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
implementation not only for this SAP project but for any complex and large flexible package.

5. What major requirements drive the development of the IBS as opposed to the standalone CMS, where it is stated that in SPPD CMS is driven by three major requirements such as 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from DR: CMS would better fulfill the financial requirements but not for the whole business. Even if we implement SAP it won't fulfill all of our business information requirements, which need to be developed otherwise. An example would be the Maintenance management. If the SAP system will implement it seems about 60% requirements of Maintenance management functionality could fulfill. To fulfill the remaining requirements we need to develop those by some other means. SAP cannot cover all functionalities in the areas of routing and scheduling tasks of Maintenance management, which need to be developed.

6. In what sense do you think the SAP system is powerful? What SAP modules have you decided to purchase?

Reply from DR: It is a powerful system... because of its integration facilities, timeliness of data, integrity of data, accurate and comprehensive information and real time features. I have no idea what they are going to buy. So far as I know RM-INST and RM-MAT modules that we are purchasing. At present I am working with those.

7. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from DR: In a word, I would say it was disorganised and unstructured and seemed approached in a wrong manner. Very little time was given for requirement definitions. It did not provide any good direction because it was not carried out properly. It ended up not designing the ideal type CMS, simply duplications of existing systems. For functional design stage the number derived in at a detail level straight away without a proper decomposition at a lower level.

8. Some argue that the project is still in the "first phase". Could you please comment on this?

Reply from DR: Because we start from the beginning and therefore it is the first phase of designing requirement definitions.

9. Have you seen any "political struggle" (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from DR: Yes, there are lots of political struggles. There are lots of intra-group conflicts, all dysfunctional. Certain degree of conflict is healthy, but extreme level of conflict is harmful for the project. For example, the integration manager (Ms Kerry Reid) is defensive for Finance and Planning... undermining both Kas Zoszak (project manager Development team) and John Denison of IT department... resulting in different roles.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Kerry expects the work to be done in certain manner, whereas Geoff Shaw expected different way. Battles of personalities - getting her away.

Historically, there exist lots of intra-group conflicts because accountant can never get on well with engineers and IT people. It is a long standing one for engineers vs accountants. A recent happening is accountant vs IT people. As a result of these conflicts the project structure is affected. If you set both original and this one, historically, all the project (of information technology types) runs by IT managers. Users only provided assistance such as definitions and requirements at the design stage. Now, they have taken the project management role or directing role as well as team role from IT.

Mr Shaw's original impression was IT simply would provide technical support. But, it is much more than that. The BHP-IT is designing the whole project training and how to use the system and managing the project. We have experience on project management. Some accountants feel that they can do the job without any experience. These attitudes are one of the major cause of conflicts between accountant vs IT people.

10. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem between various functional owners?

Reply from DR: If some areas are running behind, it's a Big Bang system. We have to be careful about the cost of the project. Some area can implement on due date... interface and cost issue. If some areas running behind, there should be some provision for temporary interface or keeps the modules as it is. I do think there is a communication problem between functional owners in that some of the functional owners are totally unaware of other areas. They are not prepared to listen. Policy has been made that we are going for standard SAP modules. Problem is that, for example, in Maintenance management area it would fulfill only 60% of their [information system] requirements. We have not recognised all the problems fully yet, which will impact the implementation date.

11. In order to successfully implement your Integrated Business System what aspects do you consider most important?

Reply from DR: First, the most important aspect is 'change management'. Second, obtaining both management and users' commitment. Then, lots of other things need to be taken into considerations, such as probably top management might be convinced about the system but not so easily by the users' community. Users' feedback that the team is getting at the moment is somewhat negative. Other important areas are commitments of the project teams and users' and trainers training. Making sure that we have one goal... harmony between the groups, no dysfunctional conflicts, good communication channel.

12. What aspects of the standard documentation procedures of IT could you equate with the standard documentation procedures of SPPD's TQC approach?

Reply from DR: I cannot see any difference between the two. If anyone says that he/she is ignorant about this. Though TQC does not fully answer of what SPPD or IT does by comparison. I would assume TQC for both divisions is identical.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
13. Could you please provide a brief overview on the methodology of detailed design?

Reply from DR: Methodology to us is a set of guidelines of how to carry out the following three phases. First, the phase level is broken down to phase objective, rational and deliverables; second, task level is to be broken down the same way; third, activity level... We have a hand book on the methodological guidelines which covers the following:

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We are going to use Flexible Package Implementation Methodologies for SAP Implementation.

14. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from DR: I believe that IT will definitely be needing more people, especially expert in the SAP system. In Australia SAP is in a boom. BHP-IT is considered to be a preferred installer and supplier - providing system integration facilities and expertise for other companies. IT will provide project management and consultancy to external companies. In Melbourne quite a few people can cope with the demand for SAP consultancy.

In SPPD initially there may not be any difficulty but in the long run they would be needing more clerical staff - paper shufflers.

14. In this multidisciplinary project, who do you think plays a major role?

Reply from DR: It depends. I think at this moment finance area plays a major role. They are the driving force. There are numbers of reasons for that: (1) at this point in time they gathered more knowledge on the SAP system than any other areas, they now worked about 18 months on the project. However, they are not playing "benefit gain" role. Maintenance management supposed to be providing 80% of the benefit of the project, which would indicate that one of the critical success factor is the successful implementation of a 80% that satisfy 60% of the maintenance business requirements. You can conclude from that my opinion is that each should have even role... Another reason is that release 5.0c version of SAP. SAP consultant said that Maintenance management modules are the cores within the SAP system. In which case you could assume that Maintenance management would have to play a major role.

15. To you, what is a "cultural issue"?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from DR: To me, cultural issues are concerned with the nature of a particular group of people. Consider the nature of financial people and their approaches to functional design. More examples of cultural issues are intra-group conflict, problem with matching three different cultures such as accounting and finance, engineering and information technology cultures. Within each of these cultures there exist sub-cultures.

17. Why does it take a long time to manage a change?

Reply from DR: You mean relating to our project. To make a right choice it takes a long time. Initially, investigating problems in terms of MIS then looking at the opportunity for improvement for current operations at the departmental level - investigating the alternatives and assessing the alternatives which in itself a very time consuming process. Even after that you have the project implementation time which in itself consuming significant time in a large project like this. Then trying to soften the importance on the organisation through the media, through training, through constant communication, through managing expectations... In addition, you will always find a normal bureaucratic "Red Tape" process and various levels of approvals to be taken.

18. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from DR: In comparison to their current roles most positions in finance will remain the same, but a few accountants will become system administrators. (This will be a change of focus)

19. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from DR: For SPPD the only role IT will play a further technical support that will provide upgrading the softwares, writing additional ABAP/4 reports and possibly providing additional functionality.

20. What major roles do you think will different functional owners (including engineers) play under the proposed system implementation?

Reply from DR: Their roles would not change, will remain the same as they were.

21. Do you have any concern on the communication procedures between the project team and higher level management authority?

Reply from DR: I think steering committee is too disassociated from the project team, to be able to provide necessary directions and guidance that they were intended to. The role is lacking - has not that and they don't like it doing in the future. It appears that there are barriers between the project teams and steering committee. It is either the steering committee are ignoring the concerns of the project team or concerned are being fully communicated to those project managers - this comment is based on CMS implementation.

22. If you are involved with a project does it add any credit to your HR report?

Reply from DR: Yes, if it works, definitely it is not if it not. It is a fairly publicise project - working on this project individual benefit.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
23. Are you happy with the current structure of the project?

Reply from PR: Yes, happier than the previous structure. But I would be more happier with a traditional project implementation structure where IT would dominate the structure than any one else.

I thanked Mr Rouse. The discussion continued till 3-35 pm.

Informal Interview with Mr Rodney Winbank  (Project group leader Technical Support - IBS Project Phoenix 21) on 7 October 1992 at 9-30 am: Venue - Warrawong IT Centre, building 1, King Street, Port Kembla.

This interview was not tape recorded. The following conversations were written based on notes taken during the interview.

1. When did you join this project?

Reply from Rodney Winbank (RW): I joined this project in April 1991.

2. When did you join IT?

Reply from RW: Originally I joined in BHP's Sheet and Coil Division in 1972. In 1977, S&CD (Sheet and Coil Division) and SPPD jointly formed a computer group. In 1989/1990 BHP-Information Technology is formed to support BHP's all divisions. BHP-IT Port Kembla became a part of BHP-IT group. All computing people from different areas has been transferred to the BHP-IT. It is now a separate entity and a division centrally controlled by Melbourne head office. I am now working with BHP-IT, Wollongong region.

3. What major areas were you involved in with before joining this project?

Reply from RW: In S&CP division I was involved with major computing projects for the development of product and process costing system. When S&CP first introduced the IBM computing languages and DB2, I was involved with that. We used Mincom (an Australian company) software, especially for scheduling and routing in Maintenance engineering area.

4. What major areas are you involved in with the Phoenix 21 project?

Reply from RW: I am providing technical support: ensuring that the system is able to be used, problem solving for the team for SAP, investigating "bug error" (SAP terminology), quality management and quality control, security of the system, training and programming, system performance evaluation, capacity issues, service agreements between SPPD and IT, Data conversation from external sources to SAP system.

5. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements such as the 'strategic', the 'operational' and the 'financial' requirements? Do you think IBS can fulfill some additional requirements?

Reply from RW: From strategic point of view we decided to implement IBS. For operational information managing we have chosen SAP. Of course, people should
recognise that not all information processing functionality would be covered by SAP, say on average about 80% functionality could cover by SAP. For Financial it might fulfil 90% and for Maintenance engineering, say 55%... We have to trade-off the integration benefits... Some benefits may be greater than others... strategically as a whole the division will benefit in the long run.

6. In what sense do you think the SAP system is powerful? What SAP modules have you decided to purchase?

Reply from RW: From the computing point of view it has probably the best fourth generation language, that is, in my best knowledge it has its own data dictionary which comes along with the system. From the technical and maintenance point of view job is more easier. Its management reporting facilities are quite good.

7. In what ways could you evaluate the work that has been carried out by the functional/conceptual design teams under the previous project structure?

Reply from RW: Those works saved us huge amount of time and problems. We really went far way down to the track and have gathered experience to work on. They gave us bench marks. You see, very first project you put in it is always like this.

8. Some argue that the project is still in the "first phase". Could you please comment on this?

Reply from RW: Basically we are paying the penalty for slack methodology (approach) in the past. This phase (now) we are documenting business processes. It is not only computer system itself but identifying the impact or causes of the business processes. We still need to do a lot of work on this.

9. Have you seen any "political struggle" (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from RW: Major one is "them & us" struggle - SPPD (them) and IT (us) people. We should remove this. The barrier is that it's a cultural issue and a long debated issue which impact upon us...

10. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem between various functional owners?

Reply from RW: It's a problem. The degree to what extent delay is allowed, how much, dependent upon the group headed by each functional area than any others. A lot more expectation that leaders would bring others to the same line. Probably IT can play this major role to bring them along.

11. In order to successfully implement your Integrated Business System what important aspects do you consider most?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from RW: Probably the biggest one is the acceptance of functional owners of the systems by the chief executives. They have the power. SAP is the chosen vehicle. Management commitment and training the users are important factors.

12. What aspects of the standard documentation procedures of IT could you equate with the standard documentation procedures of SPPD's TQC approach?

Reply from RW: They are basically same approach. In technical computing area there may be some exceptional aspects which may vary but mostly very similar.

13. Could you please provide a brief overview of the tasks of the 'technical support group'?

Reply from RW: [Mr Winbank gave me some technical support overview presentation documents used in a presentation to SAP users]

14. Could you please provide an overview of the estimation techniques - costs and technical resource availability?

Reply from RW: We have to develop this in conjunction with the SAP consultants. Depend on - created Model - DASD bites, Produced model - MIPS computer power. We will give the estimation to Facilities Management they will calculate the costs. The Facilities Management is a department of BHP-IT which is controlled by the National Operation Group in Melbourne. They are the one who will work out the costs for computing power and cost/benefit analysis.

15. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from RW: My expectation is that within IT, we might not need as many as fourteen or fifteen people. Probably three to four people after completion can manage the SAP function for SPPD. Within SPPD, it is hard to tell. However, they are expecting to reduce the number, which won't surprise me. The nature and operations under the SAP system - you may need people at data collection point... decentralisation of information system. I don't know.

16. In this multidisciplinary project, who do you think plays a major role?

Reply from RW: I think major roles played by the users of SPPD. They have to come by determining the requirement definitions. Traditionally users' involvement was not considered as regorous as we are doing now, when you develop an information system. Their roles are considered in this project more critical than ever have been.

17. To you, what is a "cultural issue"?

Reply from RW: It is basically the way one do things. You are comfortable in your own environment. People anxiety and fear - people now looking at me... this type of things!

18. Why does it take a long time to manage a change?

Reply from RW: A major problem is understanding the information requirements by those who are going to manage the information system.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
19. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from RW: Hard to tell. Personally I don't think accountant traditionally were driven by such an increasing role. Under SAP even down. More hands on using the system are required.

20. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from RW: That's going to be interesting. SAP people stated the concept - to phase out IT people for their software so user can become more involved in it. Our role would be less as developer rather more in consultancy. There is an increasing need for learning the SAP system by IT personnel, especially to learn SAP's ABAP/4 language.

21. What major roles do you think will different functional owners (including engineers) play under the proposed system implementation?

Reply from RW: Accountants were on the top of the tree... now going down.

22. Do you have any concern on the communication procedures between the project team and higher level management authority?

Reply from RW: I have no concern with top management. With John Bown communication is quite good. But I am a bit worried about functional owners. They are slow in putting figure out and getting the job done.

23. If you are involved with a project does it add any credit to your HR report?

Reply from RW: Honestly, I don't think it does. Some people understand HR as money. I have very little regard about HR in the way they do things.

24. Are you happy with the current structure of the project?

Reply from RW: Yes. I believe this structure has a more chance to be successful than the earlier structure.

I thanked Mr Winbank. The interview continued for an hour.

Informe Interview with Mr Peter Newing (Phoenix 21 project member) on 28 October 1992 at 2-00 pm: Venue - Warrawong IT Centre, Port Kembla.

[This interview was not tape recorded. The following conversations were written based on notes taken during the interview]

1. When did you join in this project?

Reply from Peter Newing (PN): I joined this project in June 1990.

2. When did you join in BHP-SPPD?

Reply from PN: I joined SPPD's computer section in January 1985.

3. What major areas are you involved in with the project?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
4. What major requirements drive the development of your IBS as opposed to the standalone CMS, where it is stated that in SPPD CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from PN: Yes, side benefit for IBS.

5. In what ways could you evaluate the work that has been carried out by the functional/conceptual design teams under the previous project structure?

Reply from PN: Majority of the work still applicable. Some areas may not be applicable - largely they are useful.

6. In what phases are you now at in developing the IBS project?

Reply from PN: We are now doing functional design. The functional owners have to sign off. The steering committee and the management have to approve the project.

7. Have you seen any "political struggle" (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from PN: Yes. In some areas... major reasons are personality conflicts, lots of frustrations... things going slowly... general lack of confidence at certain stage.

8. In what sense do you think the SAP system is powerful?

Reply from PN: Integration makes the system more powerful.

9. What aspects of the standard documentation procedures of IT could you equate with the standard documentation procedures of SPPD's TQC approach?

Reply from PN: I don't think it is a major issue.

11. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far you have overcome this problem? Do you see any communication problem between various functional owners?

Reply from PN: It's still a big problem... Communication gap is still there.

12. What aspects do you think should be considered important for the area of maintenance and assets management under the proposed SAP system?

Reply from PN: I don't know much about assets' management. Assets in terms of capital projects is a major area we will prototype... linking between project structure such as taxation and government regulations.

13. Have you noticed any behavioural implications amongst various users of the system at this stage?
Reply from PN: Initially there were some... SAP is forced to them. Now they know more about SAP."

14. To you, what is a "cultural issue"?

Reply from PN: Anything that related to change is a cultural issue such as change in practice.

15. In this multidisciplinary project who do you think plays a major role?

Reply from PN: To me, everybody plays a role in this project. Because it is an integrated system development such as accountants, engineers, information technology and supply department.

16. If you are involved with a project does it add any credit to your HR report?

Reply from PN: With Information Technology it is different. We always work with project, which is our normal job.

17. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from PN: They will engage more towards analysis... analysis of reports rather than re-entering off-loaded data.

18. What major roles do you think will engineers (including IT people) play in future under the proposed system implementation?

Reply from PN: If the new system implemented, engineers will not worry so much about the "cost estimation". They can get information at source... they can be more efficient in workplace. In the past, IT was looking at developing programs. However, they have to learn new system in order to maintain it.

19. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from PN: SPPD can handle it, of course with the assistance of IT.

20. In order to successfully implement your Integrated Business System what important aspects do you consider most?

Reply from PN: Most important aspects are - project management, communication between various teams, conflicts' resolution and the knowledge of the SAP products.

21. Are you happy with the current structure of the project?

Reply from PN: Yes. It is better now.

22. What sort of role do you think should IT play with SPPD in maintaining the system after the implementation?

Reply from PN: IT will provide the technical support.
Informal Interview with Mr Mark Rodrigues (a project member) on 3 November 1992 at 11-00 am: Venue - Warrawong IT Centre, King Street, Port Kembla.

[This interview was not tape recorded. The following conversations were written based on notes taken during the interview.]

1. When did you join in this project?


2. When did you join in BHP-SPPP?

Reply from MR: I joined in BHP-IT in January 1991 when I graduated in the area of computing science.

3. What major areas are you involved in with the project?

Reply from MR: I am involved with the labour costing area.

4. What major requirements drive the development of your IBS as opposed to the standalone CMS, where it is stated that in SPPP CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from MR: CMS project was focused more on financial aspects. Now IBS project is looking all of these as a unit.

5. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from MR: From the project teams view point, it's a learning process. At that stage teams were learning... team is still learning. Now we have more groups in the project than we had before.

6. In what phases are you now in developing the IBS project?

Reply from MR: We are now at functional design phase.

7. Have you seen any "political struggle" (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from MR: Yes, there are. It is because there are different approaches the way we do things here. I am not exposed to that political stuffs.

8. In what sense do you think the SAP system is powerful?

Reply from MR: It is powerful because the way it can cover the whole business and operate as one system... one-time data entry - integration.

9. What aspects of the standard documentation procedures of IT could you equate with the standard documentation procedures of SPPP's TQC approach?

Reply from MR: They are similar.
10. What major aspects have you given priority in designing Labour Costing requirement definitions?

Reply from MR: We should set out objectives of each business process then work along.

11. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far you have overcome this problem? Do you see any communication problem between various functional owners?

Reply from MR: Currently labour costing is dictated by Human Resources - lack of communication between HR and costing.

12. What aspects do you think should be considered important for the area of Labour Costing under the proposed IBS implementation?

Reply from MR: My point of view - access to data - ie security issue is very important.

13. Have you noticed any behavioural implications amongst various users of the system at this stage?

Reply from MR: Lately there are lots of misconception how to proceed - lack of information - cost office people have no exposure on the system - not enough contact of the system. Major issue to us is the selling the system to the users.

14. To you, what is a "cultural issue"?

Reply from MR: Changing practice is a cultural issue.

15. In this multidisciplinary project who do you think plays a major role?

Reply from MR: Change management plays a major role, R Thomas is playing major role on that. Integration is an important role that is played by Kery Reid. At a very high level, Mr Bown and Mr Zoszak are providing the driving force to give the directions of the whole project.

16. If you are involved with a project does it add any credit to your HR report?

Reply from MR: Not so much credit but the 'experience' in SAP is itself a credit to individual.

17. What major roles do you think will accountant play in future under the proposed system implementation?

Reply from MR: I think they will move to more in the planning area... more to management reporting than number crunching.

18. What Major roles do you think will engineers (including IT people) play in future under the proposed system implementation?

Reply from MR: Their level of interactions may change.

19. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?
Reply from MR: *I don't think we will be needing more.*

20. In order to successfully implement your Integrated Business System (as a whole) what aspects do you consider most important?

Reply from MR: *I would mention a few such as integration, users' acceptance and training.*

21. Are you happy with the current structure of the project?

Reply from MR: *I am happy with this structure.*

22. What roles do you think should IT play with SPPD in maintaining the system after the implementation?

Reply from MR: *IT will provide technical support in matching SAP to SPPD's business requirements.*

I thank Mr Rodrigue. The interview continued for an hour.

**Informal Interview with Ms Janice Blackley (Cost Accountant - Production Cost Department) on 11 November 1992 at 2-00 pm: Venue - Commercial Building, Port Kembla.**

[This interview was not tape recorded. The following conversations were written based on notes taken during the interview.]

1. When did you join in BHP-SPPP?


2. What major areas are you currently involved in with your department?

Reply from JB1: *I am running monthly costs. Other major areas are manufacturing variance analysis, inventory valuation and initial budget preparation.*

3. Could you please provide an overview of the SPPD's current costing system?

Reply from JB1: [She provided me several flow charts and documents.]

4. Do you have any involvement with your IBS project?

Reply from JB1: *Not much.*

5. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from JB1: [We skip this question]

6. In what ways could you evaluate the SAP systems over your current systems?
7. During this transition period have you faced with any major difficulty?

Reply from JB1: Perhaps lack of communication... what's really going on there (phoenix 21 project) we really don't have any idea. The project teams don't give us information rather always ask us for providing information.

8. Could you please comment on the future changing roles of accountant (if any)?

Reply from JB1: I can only guess. We receive very little information. We don't hear much. We also sometime hear that cost office will disappear.

9. What roles a co-ordinator play in the IBS project?

Reply from JB1: Part of the problem in answering this question is I don't know. I have no idea what could be the role of co-ordinators.

10. To you, what is a "cultural issue"?

Reply from JB1: I can't think of any.

11. Have you seen any "political struggle" (including interpersonal and organisational conflicts) amongst various users of the proposed system? If so, what are the major reasons for such conflicts?

Reply from JB1: It has not got to a stage ... It does not mean anything to us yet. It is not affecting us yet... really not knowing much of it. It has not been an issue yet. As user we know very little what SAP is about.

12. After the implementation of new system, do you think will you be needing more people or the existing personnel can handle it?

Reply from JB1: I don't make those decisions. All that I heard rumour about that there will be less people in this department. I can't see that's practical.

13. What major concerns do you think should be considered important in implementing the new IBS system for your department and as a whole?

Reply from JB1: [We skip this question]

14. Do you have any concern that needed to be considered important for the improvement of your cost management system?

Reply from JB1: Concerns I see important in improving CMS are "accuracy of data" and timeliness of cost information. That require more people's involvement at this stage.

I thank Ms Blackley. Our conversations continued for about half an hour.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Informal Interview with Mr Richard Jusinski (Cost Accountant - Production Cost Department) on 11 November 1992 at 3-30 pm: Venue - Commercial Building, Port Kembla.

[This conversations were not tape recorded. They were written based on notes taken.]

1. When did you join in BHP-SPPD?


2. What major areas are you currently involved in with your department?

Reply from RJ: I am currently involved with the costing for the coal and coke as well as the collieries divisions.

3. Could you please provide an overview of the SPPD's current costing system?

Reply from RJ: Mr Justinoski provided various inscriptions for costing for coal and coke under DISC system. [See notes - for my reference].

4. Do you have any involvement with your IBS project?

Reply from RJ: I don't have any involvement with the IBS project at the moment.

5. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements such as 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from RJ: [we skip this question]

6. In what ways could you evaluate the SAP systems over your current systems?

Reply from RJ: Only exposure I have that I attended a SAP training course in Sydney. At the moment I don't know what's happening in the project.

7. During this transition period have you faced with any major difficulty?

Reply from RJ: I have not faced any problem. Every work seems to me normal. It has not affected me at all.

8. Could you please comment on the future changing roles of accountant (if any)?

Reply from RJ: I think as far as SAP system is concerned the system will take care of everything and no middleman will be required. Therefore there will be less job for accountant.

9. What roles do a co-ordinator play in the IBS project?

Reply from RJ: From the training I understood how to use SAP. For us they put us off until March 1993.

10. To you, what is a "cultural issue"?

Reply from RJ: Something that is done for a long time such as work practice and changing over DISC to SAP.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
11. Have you seen any "political struggle" (including interpersonal and organisational conflicts) amongst various users of the proposed system? If so, what are the major reasons for such conflicts?

Reply from RJ: No. I have not.

12. After the implementation of new system, do you think will you be needing more people or the existing personnel can handle it?

Reply from RJ: We won't need more people. I believe existing people can handle that.

13. What major concerns do you think should be considered important in implementing the new IBS system for your department and as a whole?

Reply from RJ: To me, main thing is proper training. As you go lots of things to learn - not brief but extensive learning. As a whole, people may be frightened because they don't know what is SAP. They don't feel comfortable with it. People don't understand it. They have to hands on it.

I thank Mr Jusinski. Our conversation continued for half an hour.

Informal Interview with Mr Jim Hall (Project Chairperson - IBS Project Phoenix 21) on 20 November 1992 at 10-00 am.: Venue - Administration Building, BHP, Port Kembla.

[This interview was tape recorded.]

1. When did you become involved with the Phoenix-21 project?

Reply from Jim Hall (JH): I joined this business in late July 1991. One of my responsibility was to inherit the Phoenix 21 project or costing system development as it was named then. At the time, the team had been in place working in the costing system for probably 6 to 8 months before my arrival as a formal team and therefore, my involvement virtually commenced immediately from that point of time.

2. When did you join BHP-SPPP?

Reply from JH: I worked in this business from 1981 to 1985 inclusive as a regional auditor and then I was transferred to Melbourne for 7 years and then I came back here in July 1991. I have been in Newcastle steel works. I spent about 5 years in a company called BHP Refectories.

3. What emphasis have you given in structuring the present structure of the IBS Phoenix 21 project?

Reply from JH: When I first arrived I guess my concern was that we are using an integrated business system philosophy and taking one module or a number of costing related modules from that integrated business system and trying to deliver the benefits of that integrated costing system. It was fairly obvious to me that the cost to do that in term of interfaces to other key related systems and the ability to really deliver a lot of the benefits that have been prescribed to the costing system development. In my view, these were...
unlikely to delivered unless a more integrated system approach was taken. Now, to get an understanding of that system approach we had to do two things - one is we had to understand in what direction SPPD was going both from a planning point of view - which was well established and understood through our business planning process. But specifically from an information system point of view and our philosophy to date had been one constructing our in-house system largely using our own BHP IT system programmers and developers to construct system to user requirements. The difficulties being that most of those systems were developed on a "stand-alone" basis. They did not have any integrated feature and therefore, there was a lot of inefficiency associated with the exchange of information, timeliness of information, the duplication of information. Two things to overcome, in an efficient way of developing and maintaining systems but not just from a software and maintenance costs but from the point of view of no one taking a "total business perspective" in the development of those systems, accounting precisely important of the last item. The whole SAP integrated business system, provided that very thing integrated business system which although would never satisfy every single requirement that we particularly use in a particular area, was more likely to, was more oriented to total business approach, and, therefore, total business approach was more likely to give us a more effective mean of managing the business. In terms of what we see as the future direction requirements our business plan. Then a series of unrelated business system that had been largely developed in isolation endeavouring really to satisfy particularly users' group requirements rather than overall business requirements.

4. What major strategic focuses instigate the Phoenix 21 project?

Reply from JH: First of all the initial emphasis was drawn from the need to replace an outdated costing system, which had been in place for some time, about 15 years. There were a lot of dissatisfactions amongst the wide range of user groups who are, if you like, to empower to manage costs and other strategic matters at lower parts within the business. Whereas the existing costing system was not terribly user friendly in that regard. That was the key things that started the process off but I think some of the other things that are equally in fact even more important. Come back to the need to consider the total business needs and then look at how our systems were fulfilling their part to satisfy those total business needs. And, if you look at our system architecture which I had put together when I arrived, you can see, the system architecture in place was very complicated, costly and old, particularly with respect to commercial types system which, as you can see, were largely sort of integrated in ten years and most of those systems had been developed in a time when flexibility and capability to do things and the efficiency which things can be done was quite different to that exists now.

5. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPP, CMS is driven by three main requirements - 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from JH: I think it's the way they can be fulfilled. The analogy that I would use is that in most system the costing system tends to be the hub, the hub of the wheel, and the other systems tend to be the spokes of the wheel, right. Most things that are cart of other systems typically end up finding their way into costing system and may well then find their

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
way back out of the costing system into other systems. So, certainly the original CMS methodology which is one recognised that the costing system was going to be the pivotal. The difference is that a lot of the strategic benefits that may have been derived by doing the costing system development stand alone were only going to be capable of being delivered by severely expensive interface requirements that would have to be built in between other systems that were developed and were prepared, all the IBS. Now, that was inefficient and ineffective and too costly. But, more importantly one of the key benefit was to get one time data input at source and to let the system then take care of where that data needed to be transferred and to ensure, very important issue, that we would not getting a situation where data that had to be re-entered into other sub-systems. Two reasons - one of the poor things associated with system structure that we got at the moment is that the same information can appear in different system and can be different and therefore, that gives a credibility problem. Because differences occur and people see the same data represented in different way and loose confidence with the ability to use that data.

6. In what sense do you think the SAP system is powerful? What SAP modules have you decided to buy?

Reply from JH: OK (a pose). When we evaluated the system we basically evaluated the costing and costing related modules of the system. However, our Melbourne people had been involved in a total evaluation of SAP as a product. It was one of the few, if not the only one, that had a full range of activities in an integrated business system and therefore, from the point of view, once you attempted to go outside straight of the financial system, there were a number of other products that had a very comprehensive range of financial systems. Perhaps, those did not have the same integrated maintenance management system or HR management system or Supply management system or production planning management system, that were parts and parcel of the wonderful product. So the powerfullness is driven from the fact that it is offering a total business system architecture. I won’t go through each of the module’s names but the major systems that we have decided to be involved in at this stage what I call Financial, Costing, Supply, Maintenance, HR. They are the predominant ones. There are lots of modules fits within each of those. We are not at this stage doing production planning. We are not also including sales system at this stage. There are lot of effort is being put into our sales marketing system, particularly the EDI arrangements that we are undertaking.

7. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from JH: Eventually, most of those works were being retained. The main change has been that lots of interface issues have been disappeared. Because of that, where we were building interfaces to existing systems - there are now integration issues that have to be understood and allowed for. So most of that original effort is now just being enhanced or more being altered to allow for the fact that the system will be integrated as opposed to build interfaces.
8. Have you seen any "political struggle" (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from JH: OK (a pose). There has been some conflict. I think that the conflicts largely were in two categories. In terms of the original costing system approach, the main conflict has been trying to deal with a complete new philosophy. Out of that, there was a lot of conceptual thinking that has to be done as we changing on challenging the way things have been done in the past and trying not to be inhibited by those things in future. So, a lot of conflicts have occurred as a result of that sort of challenge and change. The second type of conflict is mainly being conflict when other module areas brought into the project such as Maintenance and Supply. Where the parties in those areas who would have typically been evaluating their own system solution to their needs have been encouraged to use this SAP product. There has been some conflict in them satisfying themselves that the product is capable of meeting the major needs they have. So, the healthy conflict and healthy debate in making sure that they understand the SAP tool and understand how it will satisfy their needs, when up front, they were largely told that SAP was going to be the system they would use.

9. To enhance integration, are you willing to buy as many modules as required from SAP?

Reply from JH: No. This is a difficult question. Our arrangement with SAP basically enables us to trial modules under a licence arrangement and, then, once we have decided that we required the modules and we put into production, well, we have to pay a higher rate. So there is no valuation process, where we have identified the modules that we think we need. And, the identification has been largely done by that evaluation against what we see is the business requirements... those modules might satisfy. But we are not including, for example, production planning and sales at this stage. We are not just buying the total products then saying how we are going to use it. So, the areas that we have chosen are the areas that we believe will give best values to the business over the next five years.

10. An integrated business system requires extensive interfaces within various functional areas. If one functional owner is late the whole project is delayed - how far have you overcome this problem? Do you see any communication problem between various functional owners?

Reply from JH: Our implementation philosophy is the one with those major areas I mentioned to you - all be going live at the same time June 1994. Now, there may be an opportunity for one or some to go earlier than that date. But, in doing so, they recognise that the integration to other parts won't be there until the whole business system is completed. I don't see the interface problem that you are alluding to because... may need to be explained, given the integration path we have chosen I think that really eliminates a lot of those interface issues.

11. In order to successfully implement your Integrated Business System (as a whole) what aspects do you consider most important?

Reply from JH: Well, OK (a pose). I think, there are a number of things I would like to mention. One is that you obviously need some key people who are experts in their
respective functional areas. You need a good project manager with project management skill who can perhaps then back from the issues associate with the systems and concentrate on managing the project in the same way that you would manage the construction of a building or manage the installation of a piece of equipment. So, we employ a fairly strong project methodology to meet the various key milestones to ensure that everyone is kept on track. I think you need a very strong commitment to complete the project by a given date. And, one of the key to this is that we have chosen certain things to be in place to enable our budget to be completed for the 1994-1995 financial year and that everyone goes live by the commencement on 1 June 1994. So I think these are some of the key success factors. And the last one is as I mentioned is that I think we have to have some key consultant's involvement. Ronald FieIs is a clear example of that. Throughout the different paths of the project to both you (in) and outside looking in perspective to how we are tackling the issue and also to help with some of the prototyping and systems related issues.

I think, I could also add one more that I think is going to be very important is that the change management. We have deliberately adopted a philosophy of introducing the concept of change management early in the project life rather than later in the project life to get communication amongst the work force, to get an understanding of the training requirements in a better planned approach to the training requirements both of the project teams themselves and of the users who will have to be trained at various points. Last but not the least, in an endeavoured to understand how certain jobs and responsibilities are going to change as a result of introducing this new system we are trying to anticipate those issues and deal with them during the project development rather than towards the end of the project.

12. After the implementation of the SAP system, do you think will you be needing more people or can the existing personnel can handle it?

Reply from JH: What context you mean? [I responded, in terms of those who are managing the information system, not the project developmental team only]. OK. The whole nature of this system development is one that brings a lot of efficiencies with the way information are both used and generated. I would expect that a by-product of the system would be the ability to operate with less people.

13. In this multi disciplinary project, who do you think plays a major role?

Reply from JH: Well, I think the major roles start with an acceptance by the general manager and his management team that this is the direction that the business needs to go in. Without that commitment from the top to the change process that is occurring I don't think it would be successful. Therefore, what we have done is that that management team has adopted a philosophy of having two groups of people who effectively manage that responsibility on their behalf. The first one is a steering committee in which I am a chairman which has representative of that management team that basically meets on a quarterly basis just to understand any large issues that may need management attention. The second is a steering group that I also chair was the project management plus the functional owners are involved and that meets on a monthly basis at minimum. I think, they are some of the key success factors combined with, as I said, a very strong manager who can then manage the project in its totality.
14. To you, what is a "cultural issue"?

Reply from JH: I think one of the textbook definition of culture is the way we do things around here. I guess to a large extent I agree with that definition. What we are trying to do is to change the way we do things around here. To something more fitting a world class competitive organisation and we see that integrated business system provides one of the tools that enables some of the cultural change to occur.

15. Why does it take a long time to manage a change?

Reply from JH: In the main, you are not just talking about an installation of a computer system. What you are talking about is changing the way people do things. The change the way people do things in a manner which gets acceptance, in a manner that enables success to be derived from the change, which requires time. History has shown us that things are done too quickly without thought usually have to be done again.

16. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from JH: The role of accountants has been traditionally defined in two major areas such as financial accounting and management accounting. I think with the introduction of this system on the financial accounting side we will bring a lot more integrity and because of the ability to enter information once at source. On the management accounting side, I obviously see the area of greatest scope for change in the role of the accountant. [I intervene saying, in other words you are saying that people who will not be more involved with number crunching rather than a sort of... Jim taken my argument by saying]... analysis and assisting management in making decisions about options available to the business that are more valuable than a lot of number crunching that is often you found, because of the lack of quality measurement to support the conclusion that has been reached.

17. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from JH: One of the key things we believe the system needs to have a continuing system support philosophy. It won't just be IT people but obviously there is a need for continuing IT support and continuing users supports. We are very keen to ensure that. On this occasion, we provided that ongoing support. Whereas in previous system developments once the system is implemented say after six months typically that support has been dispensed.

18. What major roles do you think will different functional owners (including engineers) play under the proposed system implementation?

Reply from JH: I think that the functional owners are fairly keen in ensuring that the major user requirements are covered and they are fairly keen in getting user acceptance of the final product that is developed for usage in various functional areas.

19. Could you please give a brief overview of the communication procedures between the project team and higher level management authority?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from JH: I think I have given you earlier on some sort of project structure. Basically, John Bown is the project manager who is responsible for downward communications through the various members of the project team. John Bown together with Kas koszak, Kerry Reid and Steve Senders sit on the steering committee that also involve the functional owners. So, that is one mode of upward communication. The next mode is I am the chairman of that committee I am chairman of the next committee up which various other representatives of the management team who are also (some of them also) involved in that steering committee, also participate. That is another mechanism of communication of management. Finally, the general manager is ultimately responsible for authorising the project scope of work and any cash required to fund the project. So, there is a written communication. Obviously some discussion at management meetings where necessary to ensure that process is nicely carried out.

20. From a management perspective how are you viewing the project development? Do you see any problem that can hinder your forthcoming functional design stage of the project?

Reply from JH: OK. I will make few comments. We set some key milestones for the project. The first major one is the one in March 1993, when functional design has to be completed. That is a very stretched one because in some cases the people have not had an opportunity to deal with the modules yet. Maintenance is a key example of that. I think we are making a good step in getting all the project team together in one work area at the Warrawong Conference centre. That is an idea to ensure that the communication within the project team and the appropriate training facilities are provided to create right environment for efforts of those people. I think that has been a key step. Largely, I think management is viewing at the moment that the project is on track. There are some concerns about SAP's ability to deliver their part, that is not a criticism of SAP, it's just a recognition that this is a big project and we have control over our resources and our very relying on SAP to provide their part, particularly with respect to some of the key deliverable like consultants and modules they have to provide, and providing those things are delivered in accordance with the project schedule. We don't see why we can't meet the milestone.

I thank Mr Hall. The interview continued for an hour.

Informal Interview with Mr Steve Sanders (Implementation Manager - IBS Project) on 4 December 1992 at 10-00 am: Venue - Warrawong Conference Centre, BHP-SPPD, Port Kembla.

[This interview is tape recorded]

1. When did you become involved with the Phoenix 21 project?

Reply from Steve Senders (SS): Approximately two months ago. It was in August 1992.

2. When did you join BHP-SPPD?

Reply from SS: It was about sixteen years ago.

3. What major areas were you involved in with before joining this project?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from SS: Immediately before joining the project I was the superintendent of Occupational Health and Safety and Rehabilitation. I was responsible for the administration of five departments in that particular area. Five years before that I was the superintendent of training and development. I had been working for that position for about seven years.

4. What emphasis have you given in structuring the present structure of the IBS project? What are the main reasons of moving Phoenix 21 office to the Warrawong Conference centre?

Reply from SS: I have been working in this project for two months only. Really I had a little input in structuring the project. That had been done prior to my joining.

There are a couple of reasons for moving Phoenix 21 project office at Warrawong Conference centre. My perspective was that I did not think the Information Technology office area was appropriate to the nature of the project. It did not allow for communication between work groups and we were using a borrowed facility in a sense. I thought it was appropriate to get team together in an environment where they can regard as their environment in a configuration that allows to communicate better with one another. We also did need extra training facilities which the IT offices could not provide. The Warrawong Conference centre is the natural place, my perspective, to install a proper training facility centre.

5. What major requirements drive the development of your IBS as opposed to CMS, where it is stated that in SPPP CMS is driven by three main requirements - 'strategic', 'operational' and 'financial' requirements? Do you think can IBS fulfil some additional requirements?

Reply from SS: I think all these three requirements still apply for the IBS. I think in terms of the CMS development would not have impacted on both operational and strategic sides of our business as the new project is going to be. I think these three main requirements such as strategic, operational, and financial, which were expressed in the cost management system referred to cost management. Whereas in this revised project we are saying that the strategic, operational and financial requirements to business, which has a vast difference in scope. Previously it was focused on only the financial aspects. I think the original project was going (intended) to improve the strategic and operational side all those financial arrangements only from that perspective. Now by integrating, for instance, Maintenance and Supply system, we are saying that we are also looking at those parts of the business and how they can be integrated into the financial and therefore the scope is vastly wide.

6. In what sense do you think the SAP system is powerful? What SAP modules have you decided to buy?

Reply from SS: My hesitant is on the basis that we understand SAP to be powerful. It is not yet being demonstrated. So we have based our purchasing decision on, I think, the reports of the power of the system and its reputation. I wanted to be convinced it is operational that it is such a system. What I gathered though, it does appear to be an extremely useful piece of software. I think what makes it powerful its ability to integrate what we already have in existing system that we can do interfaces to. It also replaces a lot time developing

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they don't talk one another so I think what makes an extremely useful system for the business is that we will be able to share a lot of information that has not previously been shared.

7. Have you seen any "political struggle" (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from SS: I think there are. They are normal part of generally working together. I actually think a lot of the conflicts occurring is for communication styles. Communication in the sense of the words and style of language one person use does not necessarily fit with the language and style of communicating with another person has or prefers. Consequently differences arise in the difficulty they have in communicating to another because they are using a different language. I think some individuals have very strong opinions in dealing with issues that are become habitual and that they differ from other strong individuals approach dealing with the same issues. So, there are conflicts of technique. Sometimes, they perceived conflicts as personal. If you thought more about it and observed not what they are saying but how they are saying it, you can detect there is a difference in language they use and consequently cause conflict. Because they don't understand others point of view. It's a linguistic problem.

8. To enhance integration, are you willing to buy as many modules as required from SAP?

Reply from SS: The question is a bit too simple, in the sense that I think we are willing to buy whatever it needs to make the system effective. If we decide for instance that we are going to have only a core system in place then we will buy modules necessary to ensure that core system operates. If we have the luxury of going further than that with the time permitted and resources we have, to put some of the extra little bits in to make the system more widely integrated. Then, we buy modules to do that. I don't think we will buy modules "willy and nielli" for the sake of buying the modules. There should be a purpose the modules we buy. I think, the arrangement that we have with SAP to return modules that we could discover that are not useful to us in our end result is a good one. Because, we got to make sure that we don't buy modules that are not necessarily useful to us. [I intervene: will you pay for those?] What will happen is any return modules will have their costs subtracted from their licence agreement.

9. In order to successfully implement your Integrated Business System (as a whole) what aspects do you consider most important?

Reply from SS: I think, there are a couple of things. Firstly, we have to have the simplest of systems as possible for the end users to use it. We have to convince managers of various levels of the organisation that the system design is an improvement than what they are using now. We might have to force a change to occur. Where management has said that this will be the system in place in 1994. We will need to be ruthless in removing the systems that are currently exist that will be make to depart. Therefore, we cannot allow any lack of time an option using something other than SAP. We have to provide a lot of support beyond the start of date, to help the users further understand the system and start to investigate what the system can do. Until we switch on we will not be able to fully
understand what the system is capable of. We have to have a program in place that will allow us to experiment beyond switch on date.

10. After the implementation of SAP system, do you think will you be needing more people or can the existing personnel can handle it?

Reply from SS: The expectation is there will be less people required to run the organisation. I think, it will be some times after the implementation when it will be determined. What will happen is in the initial phases of implementation there will probably need to be an increase in, for at least maintenance the system. Because it will be sometime before we (can) sufficiently familiar with SAP to be able to then say this particular function can be eliminated and no longer needed and therefore, the person who operates that function can be removed from the organisation. I think, it will be at least twelve months after the implementation when we can start to review the way we (are going to operate) operate regarding reducing people.

11. In this multi disciplinary project, who do you think plays a major role?

Reply from SS: I don’t think there is any one role that stands out. If the project team has been established correctly with right structure, then, each of those roles has been established for a specific purpose and each of those must be important. I believe the structure has currently establish is (directed towards that end). There are couples of things are extremely important - that is, people who are in the task are capable of future thinking and are not limited by the way company currently operates. And, they are willing to discuss and negotiate with some other parts of the project team to work out solution best for the company. If they work very closely, people back at the plant, not in isolation then they also have the system that is acceptable for plant. So I think those three things are critical and if every member of the project team work for those we are likely to be successful.

12. To you, what is a "cultural issue"?

Reply from SS: If I was to find a cultural issue it would be an issue in the organisation where there are different perspectives and different view points which are conflicting. My view of culture in an organisation is "the way we do things around here". Now, if "the way we do things here" is perceived differently by different people then you have a cultural issue. If the whole organisation thinks differently then you got a real big issue. So I tend to think, culture is a personal "thing" and takes a great deal of skill and management, on the part of senior management to ensure that a culture filters through the organisation.

13. What aspects of the standard documentation procedures of IT could you equate with the standard documentation procedures of SPPD's TQC approach?

Reply from SS: I can’t answer that. I don’t know what documentation procedures IT has.

14. Why does it take a long time to manage a change? What roles do you think change management play in the implementation of your IBS system?

Reply from SS: I don’t think it necessarily takes a long time to manage a change. It depends on the level of change. Simple changes are easy to make. Changes that people have been wanting are easy to make. Changes can be made within a couple of days are not
very complicated, and easy to make. If there is a need for complex change such as changing the direction of an organisation that takes a long time. A reason it takes a long time is that I think there is usually perceived change required and that the type of change, that is - change to what, is often unknown or at least to be worked out, and more frequently has, to achieve that new change, become complicated. If you take the SAP project, for instance, it's a complicated change required, a very big part of our operations in terms of the way we manage (our business). So it's not a change can be made lightly and one that's going to take a short time because to get through change really requires (regarding) what impact it has on our business and how we can manage our business in the future. It also requires change in a lot of people in terms of skill and knowledge and in their approach to the job they do. So what is necessary, therefore, is for a lot of ownership of the change to occur... because a lot of people are involved. And, assessing this will take time, because there will be issues and concerns people raise that are contrary to the direction we are taking. These have to be addressed before those people can accept the change that has been proposed. All of this discussion takes time and (needs to be) worked out, discussed and negotiated.

I think that change management (second part of the question) will be essential. Because, such an approach to project up until now has been that change management is regarded as somebody's responsibility and that we all do wonderful things to make it happen. My belief is that change management is essential, that it is subtle and that it is not orchestrated in a conscious way. I mean we don't send out pieces of paper saying that... you don't set up a meeting to talk about change management. I believe change management occurs in terms of the way we communicate with people and get people to work out how they are going to accept the new system. If you do that effectively then change will occur and it has been managed. It has been managed in a subtle way and not highly profiled. I don't accept that legitimate approach. We need to think through the strategies in which we implement change, make sure that change is accepted by those who are effected and that it is a change management process.

15. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from SS: I don't understand what role they play now (laughter!). I think that accountants will have less direct practical role and a more logistic policy role in future. Yes, because, I think the system will manage a lot of day to day data. I don't think number crunching will be a major task for accountants. Their ability to understand the details that they had in the past would not be in necessity in future, rather they need to conceptualise differently in a broader scale how to understand the impact on the business that the different financial systems might have for change instead of sticking with the number crunching.

16. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from SS: Certainly I think that their role will be the maintenance of the system making sure that it is operational from day to day viewpoint. Their future role will be the system improvement and updating where it needs to be updated. Also, I think they have a

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role to ensure that users have no problems. I don't believe that's necessarily IT's perspective only. I think somebody has to take on the management of the system. Currently say it's SPPD's management function. IT's argument would be that SPPD has to ensure that perhaps they have appropriate staff to manage its day to day operations. But I don't see that it is necessarily be the case. I think IT has a large ownership in terms of the system.

17. What major roles do you think will different functional owners (including engineers) play under the proposed system implementation?

Reply from SS: Their role would be to review the practices that have been established as a part of the initial implementation and to continue to identify ways in which the system can further give for the organisation. I think that is by learning and understanding how the system operates and then, being able to identify whether a new attention to the system is required. I am not quite sure the functional owners would do that though. I don't think, at the current rate they will have enough knowledge about how the system operates to be able to do that. My personal view is that the functional owners in the future will not be a significant contributor to the overall project. The team leaders and individual team members who have been part of the development will have a fair opportunity of inputting and recommending future policy changes (in regards to IBS). The functional owners will be "stamps of approvals" in the organisation rather than impacting on how the system operates.

18. Could you please give a brief overview of the communication procedures between the project team and higher level management authority?

Reply from SS: Usually all done through the project team manager, John Bown. John works closely with the management team to advise what is happening. The team leaders themselves are actually doing quite a bit of discussion with various departments about what are happening there. The update news letters are going out will be read. Our last edition already has gone out to people. We need to do more. We almost have daily communication with some parts of management but it is always becoming a very difficult task. I think, we can always improve by a lot more talking.

19. From a management perspective how are you viewing the project development? Do you see any problem that can hinder your forthcoming functional design stage of the project?

Reply from SS: We are very good at focusing on what needs to be done in the short term. We are able to anticipate short term issues and problems. I don't think we have sufficiently addressed the longer term issues and those longer term issues being impacted on what we are doing now. So I think we have a very good short term perspective, let say up to three to four months but our longer term perspective is still fuzzy. We need to do some work on that. If you consider and look backward you could see the progress of last three or four months compared to previous eighteen months (you should be able to see), there is a dramatic improvement in the level of activity and decision making. That is why probably we are successful in short term of the implementation. Because, we are able to see that decisions need to be made and getting made those decisions on a very quick basis. If we (don't) continue to do that then we have the potential of missing the big picture and not
fully capturing all the potential of the project that is there. We need to really start with somewhere along that line.

We have not still received the SAP's 5.0C version. That is a real threat. If that does not come quickly that can delay. The concentrated effort of training is causing problem with doing other works related to functional design. Also the way the training is structured can affect the learning ability of the individuals because there is no much time between each training session to go and practice what they have learned in the previous session. That is a concern. In our endeavours to shrink functional design time frame had to squash the training and only allow a very short period of time for functional design after training. I personally think that the end results will be that the core issues in the functional design, what we are doing at the moment.

20. Could you please give a brief overview of the project scope for Stage One and Two?

Reply from SS: I don't understand what these mean really. They are fuzzy terms. Phase one as I understand would be the actual implementation of the system 1 June 1994. The Phase Two which I assumed to be what might happen after that period in terms of further development of the system. I have an impression that phase two will be looking at all the other parts of the company's systems including production planning system which is not included in the first phase of the IBS implementation. That's how I understand them.

I thanked Mr Steve Sanders. He welcomed me to go to him if I needed any further information. End of Interview at 10-50 am.

Informal Interview with Mr Paul Vassallo (a Functional Owner for Finance & Planning - IBS Project) on 5 January 1993 at 9-00 am: Venue - Commercial Building, BHP-SPPD, Port Kembla.

[This interview is tape recorded]

1. When did you become involved with the Phoenix-21 project?

Reply from Paul Vassallo (PV): Formally I have become involved in the project in about August/September 1992. Before that I had an informal involvement knowing that project is going ahead and also put some input into it or suggestions. When I also became officially involved with Phoenix 21 as a functional owner of Finance and Planning.

2. When did you join BHP-SPPP?

Reply from PV: I joined in Slab & Plate in April 1991. I joined BHP about thirteen years ago in the corporate area at Melbourne. Prior coming to Slab & Plate I worked for collieries division for about three years.

3. What emphasis have you given in structuring the present structure of the IBS project? Do you have any concern in this regard?

Reply from PV: I have not any sort of say or any input into it. It was already there when I became involved with it. What has happened is that actually Jim Hall was supposed to be

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
the functional owner but he realised that it would be too much to be involved with in addition to his other existing functions. So he said that I should become a functional owner. Everything was in place before I joined in the project. [Question posed: Do you have any concern in this regard?] The only concern I have is probably too many chiefs in there. It will come further down the track that the issues we need to resolve that will complicate the process and cause fighting and getting away from the real resolving the issue and getting on with the things. Because you have team leaders, functional owners, you got the project manager and his small management team, also you have got the steering committee as well as that you have pressures and influences from outside the Slab & Plate such as Rod & Bar division and corporate head office at Melbourne. They are always there but an added factor.

4. What major requirements drive the development of your IBS as opposed to the standalone CMS, where it is stated that in SPPD CMS is driven by three main requirements such as the 'strategic', the 'operational' and the 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from PV: I think in costing side it will achieve the same. But the IBS will give us added advantage to integrate the data between different areas such as Supply, Maintenance, Finance and others. We are talking for a common data. Of course, a lot of the success of the CMS is dependent on the quality of data you are getting. Having integrated business system it can make it more achievable. [Question posed: Without having IBS can you achieve the objective of CMS?] Yes, in our situation that would be a valid statement.

5. What major strategic focuses instigate the Phoenix 21 project? Do you think has it been developing along the same goals?

Reply from PV: In its current state the main goals are to integrate all our systems. Up to date it has. So far we have only done the requirement definitions and that were in line. It seems more like that the functional design that will probably bring up more issues.

6. In what sense do you think the SAP system is powerful? Will it fulfil your requirements? What SAP modules have you decided to buy for your own area?

Reply from PV: I don’t know much about SAP system. To be honest, I was not too much exposed with it. Certainly it’s a flexible system and it has a very large data base. The system can be manipulated and I think once you know the system it is user friendly as well. It allows the users more control rather than having it controlled by the IT department. [Question posed: whether SAP would fulfil SPPD’s all the data processing requirements?] It depends lot on functional design but it appears that it can provide lots of our requirements. However, it does not have hundred percent flexibility. It appears that none of those are going to be a major constraints that we cannot live with... integrity might be compromise.

We are buying the following modules in our area: RK-S costing, accounts payable and all range of financial modules.

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7. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from PV: I cannot really evaluate that... I was not involved with those.

8. Are you satisfied with the requirement definitions of the business processes of your departments?

Reply from PV: Yes, we have. I signed off all those. These are also reviewed very briefly by Mr Jim Hall, the project chairperson. They did not change much from the original design of the requirement definitions.

9. Have you seen any political struggle (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from PV: I don't think I have seen any yet. I can see in the future especially after the functional design that there may be some potential conflicts... different point of view certain direction of certain paths of the project... such as organisation structure... where departments may no longer exist or they may report to a different section of the organisation after the implementation of SAP system. [Question posed: do you think that job restructuring is necessary?] Well, some of the functionality such as Accounts payable... Since a lot of the work for Accounts Payable area will be done in Supply area so in effect the Accounts Payable area will not be a part of a manual process any more because of the automation. Then, it is a question of the existence of Accounts Payable department, secondly, to whom the Accounts Payable department would report. This is an example we may have to address.

Yes, there are some personality conflicts among individuals. I think it's so much more political. The one I have seen is that it is very personal type of things... the way people do things... the way that they go about doing things... different with the way other people do it... people have different priority... may be ways of handling things... other people may disagree with... where we have a group of so many people specially diverse background... you may expect some conflicts.

10. An integrated business system requires extensive interfaces within various functional areas. Do you have any interface problem in your area?

Reply from PV: We still will have interfaces with payroll area and manufacturing services job costing systems. Within Finance and Planning there will be some interfaces with market costing... Certainly for Payroll we must have to have interface to SAP. We are closely monitoring the development in Newcastle [ie. R&BD]. We may change couple of year's time, we did not think that our payroll system needs to be changed.

11. To successfully implement your Integrated Business System what important aspects do you consider most?

Reply from PV: First, all the integration issues have to be sorted out. If they are sorted out that means compromises also settled out. Each area needs to know what the other areas are doing and needs to know the impacts of other areas on them and why other areas need the information.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
From the costing side other issues are the actual policies that we are going to have such as policies of valuations, et cetera.

12. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

**Reply from PV:** Certainly, initial after the implementation we may need our existing people and the SAP team. But ultimate aim of installing the SAP system that we will be needing less people.

13. In this multi disciplinary project, who do you think plays a major role?

**Reply from PV:** I believe all of them play important roles. Certainly, each area has team leaders, at least some of the key members have to play a major role. Certainly the IT people I should admit that the technical side as well as hardware side making sure that all links are workable and compatible. Within each area the management team also play role. You cannot afford to leave with a few individuals. Commitment from everybody, the reasons being the places are so large that... not every individual has complete knowledge... so it is better to share the knowledge.

14. To you, what is a cultural issue?

**Reply from PV:** It's the way we do things and the way may be we think about things. So the way we are going to do things from practical point of vie, the way they actually going to hit the keys, the ways the reports are going to come out and how they are going to play around with the system, which are going to change. Whereas in the past, certainly in the cost side to get cost per tonne took long time. Now with the proposed system it will give us a lot more flexibility to do this. It will give us a lot more cost benefit information. People have to change in doing things differently.

15. Why does it take a long time to manage a change?

**Reply from PV:** I cannot comment on the earlier things of the project. But at this stage, things are so large - the integration issue - linking everything together... we could not implement the costing without implementing others... as time went on we had to tackle it from the Slab & Plate point of view rather than from an individual area of function. That's one of the reasons it takes such a long time to balance all the areas. Secondly, phases are so large... to identify impacts at various levels... getting feedback... training, et cetera... takes a long time.

16. What major roles do you think will different functional owners including engineers play under the proposed system implementation?

**Reply from PV:** We have certain roles that we have to follow for our own area. We have to sort out any policy decision that impacts on our own area then sign-off the functional design papers. The other roles are in integration side - how each area impacted upon others. Therefore, the different functional owners have to bring issues which have impact across their own system requirements.

17. What major roles do you think will accountants play in the future under the proposed system implementation?

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Reply from PV: Future accountants at SPPD have to be knowledgeable of the proposed system. At the same time, however, they can't be totally ignorant about PC based data operation. Once the integration between various feeder systems will be made using the SAP system, the accountants (especially in Finance and Planning) will play an advisory role for including the data interpretation and the way in which planning and management reporting has to be set up.

18. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from PV: Certainly up to the implementation and shortly after the implementation that they are going to play a major role for both the hardware points of view and the development area. My hope vision and whatever you call after that would be that IT's role will be relatively minimal - mainly in hardware type issues and support. Day by day the system will be more controlled by users, less IT dependent. [Question posed: Will you be having a separate IT cell with SPPP?] I don't think we will have IT cell as such, but we will have people who are a lot more IT proficient, that's not their sole job. We may have one or two system controllers who from a user point of view will control the SAP system, overall all our people would be IT proficient such that we won't need to rely on IT.

One of the major aim to manage the system by our own people rather than relying on third party such as IT and others, which has been one of the biggest cry. In the past, we fixed things via IT. Now we look forward to fixing up things by ourselves.

19. Could you please give a brief overview of the communication procedures between the project team and the higher level management authority?

Reply from PV: There is a steering committee which seats in every two months now, which deals with only major issues on the project. It is a formal meeting. At the lower level, the functional owners are supposed to meet their team leaders and the team at least once a week in an informal basis must meet to review the progress of the team. In addition to that we just recently instigate that every two week a meeting of the functional owners and integration manager (Kerry Reid) will hold to discuss various integration issues.

20. From a management perspective how are you viewing the project development, including your functional team works? Do you see any problem that can hinder your forthcoming functional design stage of the project?

Reply from PV: I must admit that I have not really had that much involvement... At the moment, there is no big issue that causes me any concern. Kerry and the team leaders who bringing up the issues we have to start addressing those such as integration issues. [Question posed: Do you see any problem that can hinder your SAP implementation?] I think certain decisions aren't made yet... some of these issues I am talking about are integration issues... after the functional design there will be a shortage of resources because after the functional design what going to happen is a bit of up turn that will require more resources... clash of priorities, training, et cetera. Ronald Fiel's (consultants) absence in 1993 would be a major problem as well.

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I thank Mr P Vessello for his co-operation. Our Conversations continued for an hour.

Informal Interview with Mr Karl Rommel (a Functional Owner of the Supply department - IBS Project) on 5 January 1993 at 3-00 pm: Venue - Commercial Building, BHP-SPPD, Port Kembla.

[This interview is tape recorded]

1. When did you become involved with the Phoenix-21 project?

Reply from Karl Rommel (KR1): I became involved in this project at the end of 1991, when it was still very much of Finance department's project. It was seen at the time that the project needed other disciplines to join in the steering committee. It was basically a finance project at the time. They found that it was effecting other areas. I was asked to represent Supply. I did that, I was also involved in the initial finance steering committee of the Phoenix 21 project until it (the project) was restructured in about May/June last year, 1992. I was involved in the decision making process, where we had a realisation that we could not install the SAP system only for finance or costing, rather, we needed to broaden the scope of the project and proposed for implementing an Integrated Business System. So I was apart of that decision making process being on the steering committee. Since then I stayed in the committee. In June/July last year when the project was restructured I was assigned the role as a functional owner of the supply function. I still sit on the steering committee.

2. When did you join BHP-SPPP?

Reply from KR1: It was in December 1968.

3. What emphasis have you given in structuring the present structure of the IBS project? Do you have any concern in this regard?

Reply from KR1: I have no input at all on any of the names of the project. I was asked if I would go in the project full time, which I initially agreed to. That was a full time role of a functional owner at that stage. After some 'roaring and frowning' by number of people and 'politicking' around the place, it was decided that the functional owner's job was only a part time job. I then declined to be further involved in the project as a full time basis. I then asked whether I could be involved as a part time functional owner. I said, yes, provided that the role would not become too large... I did not have a great deal to do with the structure. I did disagree very strongly that the functional owner's job is only a part time job. I believe that should be a full time job. I believe that one of the problems with the project at the moment that all the people on the project are not at the same level. For decision making purposes, there are not enough functional people on the project of sufficiently higher level to make decisions. That coming down to the role of functional owner. I think functional owners are at the right level in the organisation and management. I tend to think they should be more involved in the project having more of a full time involvement rather just a part time. We are not involved in the day to day operations of the project and we sometimes get calls upon to make decisions, sometimes project team does those. This is a concern that simply decisions may be made by the team

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where the team is not sufficiently higher level in the organisation to really make those decisions, whereas these policy decisions are critical to the future of the business.

4. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPD CMS is driven by three main requirements - 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from KR1: The initial concern here was focused on developing a standalone cost system and is really what the requirement was. We did not require an Integrated Business System. It just happened to be that the costing people decided on the SAP product as a solution without reference to any other functions, then it became very clear through the functional design of the implementation that we could not implement a standalone SAP costing system. Because SAP product is so integrated and it needs a lot of feeders from other systems and pushes data into other systems. We found that cost of interfaces to other systems was so horrific and it also meant double entry of data - possible data corruption and data integrity. We just came to a conclusion that if we put SAP in then we had to put in Supply and Maintenance as well. I very much think sometimes that 'the tail wagging the dog'. SAP is a driver, not the business requirements.

We had a very good supply system. We spent a lot of money in its development... It was good system - did not need SAP system. I believe with an IBS we will be getting other business benefits that we won't getting with separate (standalone) systems.

5. What major strategic focuses instigate the Phoenix 21 project? Do you think it has been developing along the same goals?

Reply from KR1: I think one of the strategic focuses to put Phoenix 21 was to put a new costing and management reporting system. It did not start off to put in an Integrated Business System - which was not its aim that it happened to be what ended up has been - for number of reasons I have already stated that the cost of integration of other business systems and the recognition that there would be further benefits in putting an Integrated Business System to a standalone costing system.

6. In what sense do you think the SAP system is powerful? Will it fulfil your requirements? What SAP modules have you decided to buy for your own area?

Reply from KR1: I keep getting told that the SAP system is powerful. I don't intimately know it. I have been through some basic training programs. I have had very cursory looks at the system. I certainly have not been trained in it and it has a very potential to be extremely powerful and I think it also has the potential to be extremely devastating to this business. If something goes wrong then it would go wrong in big way - in a big big way. It's very concerning.

I think it will fulfil about 80 to 85 per cent of our requirements. I certainly don't think it will fulfill our total requirements. The basic functions are all there. It has a lot of functions in it that we won't use and may not use but we have the potential to use. The challenge is how can we capitalise on using those benefits. Making sure that we can pick those benefits from the SAP system.

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We decided to take all of them for Supply. We have not looked all of them yet. We have an arrangement with SAP where we can return the modules which we don't need as long as we do buy it in June this year. So we are going to evaluate them all. The part of the problem with SAP is that there are so many small functions in all the modules that you want so to get functions you have to have all the modules. It is so integrated you can't just drop different modules out and have all functionality, which is a part of the problems. You really need to start with all of the modules.

7. In what ways could you evaluate the work that has been carried out by the functional and conceptual design teams under the previous project structure?

Reply from KR1: I was involved in the steering committee at that time. I have the copies of all the functional design documents. They have purely focused on financial and costing and did not really have a great impact on Supply. When we at that system had very little regard any of the other functions. It was very strict focus on finance and costing. We did not look at the ramifications of integration. So probably there is very little what is being done that we can use.

For instance we had to re-look at the company structure of SAP because it is different now to what it was when it was only a standalone costing system development project. So we had to revisit all those areas again. However, some of the decisions that was made about costing won't change.

8. Have you satisfied with the requirement definitions of the business processes of your departments?

Reply from KR1: Yes. I signed it off. I was very happy with it.

9. Have you seen any political struggle (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from KR1: Oh, absolutely! I think any project or organisation you are going to have struggles with the organisation and personal conflicts. I have seen both in this project. I have been involved with some of them myself. I think we are going to see more of it just because of the nature of the project. It's an Integrated Business system which means that when decisions are taken there are generally three or more functions involved - you own functions - your upstream and downstream functions - which means that two or three parties at least to come to any decisions or consensus. When you have that you are going to have struggle depending on the strength of the individual and ideologies - what the final solutions are going to be.

My office is in this (commercial) building. I only go down to where the team meets periodically. So I guess I don't see a great deal of it - whereas when you are sitting with forty people you probably notice that those things are happening more often. I certainly see the conflicts within the steering committee meetings when teams get together.

We have not come through the organisational issues yet. I think that will happen through functional design where we have already seen more toing and froing between functional owners and teams about ownerships [of systems and data]. We have an interesting one at

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the moment - the ownership of tables in SAP. You are most probably aware of that the SAP system is very much table driven and [thus] who controls tables [is very important]. I have a very firm view that if there is a table that affects Supply business then supply will control it. Being an integrated system quite often there is more than one discipline using a table and certainly, from my perspective, I can't allow Finance controlling my tables. It has already been started. That is going to become a fairly serious issue. Because each function needs to control their own destiny. You can't have Finance controlling Supply or Supply controlling Maintenance - in regard to the operations of those areas, the issues of maintaining tables are crucial.

10. An integrated business system requires extensive interfaces within various functional areas. Do you have any interface problem in your area?

Reply from KR1: No... Even though if you take all the SAP modules there are things we do which SAP does not provide... there are some technologies we have that are far superior than the SAP system, for instance, we need to retain EDI (Electronic Data Interchange). The SAP modules are very primitive and very very poor in that respect. It can't handle the documents that we want to exchange with our trading partners what we exchange now. So, we have to write interfaces for those. Also. a number of tasks that we do that the SAP Mainframe system does not handle. Thus, we need to handle those by using PCs up loading and down loading data. We have also very smart inventory system with hand held once digitally reading bar codes... we just in the process of implementing that system. We don't know whether the SAP's ELVS module can handle that adequately. For different data requirements... we probably got to write some interfaces and also we have to make decisions whether we are going to use the ELVS modules or whether we are going to interface with our existing system. We don't have the answer on that yet, it is far too early.

11. To successfully implement your Integrated Business System what important aspects do you consider most?

Reply from KR1: Aspects that are most important is user acceptance of the system, which means that we have to do a lot of educating the users... let them know what is going to happen. This system is the biggest system, I believe, we ever put in to this organisation. It will affect most people and virtually will affect more than fifty percent of all the people employed in this plant... If we don't get the users conditioned and on site to accept the system, it can have severe consequences if we don't implement it properly. Now associated with that not only education but the training. We have to make sure that training is done properly. Of course, it has to be done shortly before the system implemented which has a very large logistics problem in itself, when you are going to implement the system. There is no use train the people three months before the system go live. You got to do it two weeks before the system implementation and the logistic in doing that... what goes with that is users' manuals and documentation for the system. In the past, we have not been very good at either training people in or documenting the systems. Quite often putting in computer system and given them no documentation is a disaster. So they are some areas that are extremely important. The other things are very important if there is fourth item is response time - computer response time. It is absolutely critical if we are going get the user to accept the system that response time is very reasonable.

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People here have been used to PC system - response time was very quick. Users are interested how quick the screen will change for him. If it takes 20 to 25 second then user will not accept the system.

12. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?

Reply from KR1: I have to address that from a couple of perspectives. From the Supply department viewpoint I believe we will handle it with the existing people. But I am not exactly sure yet because we have not gone through functional design and the Supply team has not been fully trained in the system... there are some aspects of SAP which requires more labour to what we have in our existing system. Now we may be able to get around that with ABAPs - writing ABAP's programs. I believe we can do that by existing personnel. I think, from BHP-SPPD's point of view we will have less personnel when we put the SAP what we do have now. Because SAP will allow data entry once at source, whereas we now have many systems which require re-keying of data that creates great problems. So, with SAP we can eliminate a lot of re-keying, which means that there will be less people required.

I don't think there will be increase the only concern I have is the table maintenance in SAP. I mentioned it has got a lot of tables - very heavily table driven. I have a great concern about the maintenance of tables in SAP.

13. In this multi disciplinary project, who do you think plays a major role?

Reply from KR1: I don't think anyone does or should... this gets back to one of the earlier question about political and interpersonal issues. I guess what we really trying to do here is implement a management reporting system which should allow us to manage better. In some respect, it is very much driven by financial issues such as the profitability of the organisation. The SAP system itself is founded basically on financial aspects. Its strength is more in the financial area. The problem with that is when you look at Supply where Supply is mainly driven by Maintenance, where two thirds of our requirements and relationships are with Maintenance. So, to me, Maintenance will drive Supply to a large extent not the Finance and Planning department. However, if you look at it from a corporation point of view, then it may be the financial aspects are come out little bit more. Certainly, I don't see Finance driving Supply at all. You know, we can't forget the financial constrains and the financial issues. I think it is very much an integrated system I don't think there is anyone really going to say 'Hi, you will do this you will do that". It will be more cooperative. We have to resolve if there is any disagreement.

14. To you, what is a cultural issue?

Reply from KR1: You have some good questions here. Cultural issue is change and this IBS is a very large change for the organisation. I mentioned earlier that putting an IBS system if something goes wrong it has an effect right through the organisation. Whereas at the moment if anything goes wrong with the Supply system it does not affect other systems very much. You can time the problem in a smaller area. With IBS it goes through the organisation so that in itself is a cultural change. People have not thought about that in the past. Now they are saying if I do this what will my action mean to other people. That's
a big change. The other change is that we are going to on-line real time business system, so whatever action you make has an immediate effect. A lot of people also has not used to Mainframe computer system. So there has to be a cultural change in training people getting them thinking about the computer system and the time effect. The decision making process becomes a lot quicker - reaction has to be a lot quicker.

The work environment itself becomes quite different because you virtually tie to computers now. As said to people before that they are becoming keyboard jockeys and really that has quite a large impact on people. Not many people can cope with that change. You are changing people working in paper systems to computer systems... some people can’t physically cope with that. There is a problem with some people’s education and intelligence levels - literacy problem. On a plant of this size with the multi-cultural ethnic background that we have - we have a fair amount of literacy English problems. You know the reason I can say this is that we have just put a Supply System - we had a lot of problems with user acceptance - going to computer system away from manual systems. Lots of people don’t want to accept computers. So that’s a huge cultural change.

15. Why does it take a long time to manage a change?

Reply from KR1: The education needed to get peoples minds attuned to manage a change - we have already started that in the SAP project. We started putting stories in the Kembla News. We started telling people this is happening. We are trying to prepare people for change. What I found is people generally don’t like change. When people are in a work environment or at home change is trauma and stress. If I say to a person out there you have done this job in this way for five years, tomorrow we want you to change, many people can’t cope with that some people even resign and leave. So you have got to manage change very carefully and manage your people very carefully. You have to do over a period of time quite slowly sometimes, because some people can accept change very slowly. In the end, some people don’t accept change at all and those people will leave the organisation or find jobs. I have experienced that already here.

To manage a change takes a long time particularly if you consider some people talking here on the educational level... because they don’t know how to use the keyboard. They are horrified of the machine. Of course, there is lot of stress as well. You need time to manage that and then bring people into it slowly. Tell them what’s happening and prepare them for it. Train them for it and make them feel comfortable with the change before it’s implemented.

16. What major roles do you think will different functional owners including engineers play under the proposed system implementation?

Reply from KR1: I think in my case the role I will play once the system is implemented and better down after six months of the implementation... I will just go back into a functional role and go right out of the SAP system. I will become a user of the system. As I think all the functional owners will be. I don’t think I will play any further role in the system development. Possibly if there is a new release we might still be involved with that... but I would like to think from my point of view I personally will once the system implemented and if it’s a good implementation I will walk from it I will do something else.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
In Supply there will not be a great deal of change in work environment. A reason is that as I said we just spent a lot of money putting in a new Supply system. We have not finished implementation yet... we are still implementing that. It means we will change from a new system to another new system. A lot of our hard work and development has been done in last three years. So it will be fairly reasonably easy to change over for Supply people from what we have got now to the new system. If you would have asked me three years ago it would have been a large change for us (supply) because we had at the time used manual or semi-manual systems when we had to change to a Mainframe computer system. We had some very large change to make... some changes in organisational structure and people and training. Whereas a change now what we have got to SAP will not be all that of horrendous. The screen will change and functionality changes but the principles will not change very much. I don't think there is huge problem there - not for supply.

17. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from KR1: I think the role of accountant will go more away from manual type entries - the manual costing - the journals that sort of thing. The number of people required for Finance & Planning function will diminish because it will become very mechanised. Whereas at the moment Finance is partially mechanised and partially manual. I think lot of the entry work that the accountants are doing will be done by the users. The input of data will be plant level at source. Whereas at the moment the plant for source input onto a manual piece of paper - it goes to the accountants who then re-do that information. I think the accountants' role changes away from more clerical to more analysis - managing an executive information system than number crunching.

18. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from KR1: I don't think IT role will change much. Where it has changed is that we have gone from development in-house to a package. That in itself has been a cultural change for IT people. So their role is changing more from writing programs to looking at programs and table maintenance and implementation in this project. When this project will finish they will go back to IT. I just see then IT is another part of Integrated team that's put together same as Finance and Supply. I think in the future they will still play the same role in system maintenance but not so much in system development. The new development will come through with the new releases of the package. Only development I think they will do writing ABAPs [SAP's fourth generation language] to connect interfaces and so on. Even with ABAPs you will find that the trend is for more end users' key... is to write ABAPs in fourth generation language programs. So IT is really becoming system maintenance and custodian of the system - looked after it. The other role IT will play is [searching for] a new technology. [That is] they are watch dog for new technology and that's where they have a very important role to play. If they find any EIS system that can interface with - they have a very important role in it. Providing there is much information as much end user computing as possible. We are going more and more to end user computing in a down loading into PC - let the user manipulate the data.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
19. Could you please give a brief overview of the communication procedures between the project team and higher level management authority?

Reply from KR1: There is two ways it happens at the moment - the team reports both to the functional owners and to the project manager. So there are two lines of communication there. To functional owners mainly for policy type issues and the project manager for the operation of the project. Both the project manager and the functional owners are part of the steering committee reporting to the chairman of the steering committee. So the chairman is Mr Jim Hall - he has the responsibility of the management team. There are two thrusts. The other thrust is that I also report direct to the management team in that I can go and see my functional assistant general manager. I report to him. He is a part of the management team himself. Virtually we got parallel reporting structure - it's not a hierarchy or triangle structure.

I think communication is going well. Some of the big fights have not been fought yet. We will soon find out one get a big issue. How well that communication system works. So I think we don't have been there yet. But it did work when the steering committee decided that the project is bigger than a costing project and we need to look at IBS. The communication with the management seemed to work very well because in a very short period of time management came the same conclusion that stops the costing project and looked for an integrated business system.

20. From a management perspective how are you viewing the project development, including your functional team works? Do you see any problem that can hinder your forthcoming functional design stage of the project?

Reply from KR1: I think they are developing quite well. We got some problems which are outside the control of the project team. Things like the training has not been completed on schedule, the system is not being available to the team to work in - those sorts of issues, I think, hold up meeting of the targets in the next two or three months but it won't affect the project in the long term.

Absolutely [response to the problems of functional design] I think time tables are too tight - it is not reasonable at all. The reason I say it is not reasonable is that it was reasonable when it was set but since then the training has been pushed out. The training is not being done on schedule - training will not finish until March 1993. Functional design has to be finished in April [1993]. That's impossible. The system was supposed to be available to the team in December [1992]. It is still not available today. The team has not access to version 5.0C. It is very difficult to ask people to finish functional design if they can't go and see what the system does. And the longer it happens the impossible to meet any dates (milestones). That's becoming a big problem at the moment.

The another part of the problem is our IT people at the moment are not providing people's access to the system. They don't let them in for some strange reasons. I don't know why. It may be that they are not comfortable that the system is stable.

I thanked Mr Rommel. The interview continued for about one and a quarter of an hour.
Informal Interview with Mr John Bown (Project Director - IBS Phoenix 21 Project) on 28 January 1993 at 10-00 am: Venue - Warrawong Conference Centre, BHP-SPPD, Port Kembla.

[This interview is tape recorded.]

Good Morning John... although previously I had an interview with you but I would like to ask you a few more questions.

John responded: The answers for one, two and three that I have given you in the earlier interview are correct.

1. When did you become involved with the Phoenix-21 project?

Reply from JB: (see previous interview document)

2. When did you join BHP-SPPP?

Reply from JB: (see previous interview)

3. What emphasis have you given in structuring the present structure of the IBS project? At this stage, do you have any concern in this regards?

Reply from JB: (see previous interview)

4. What major strategic focuses instigate the Phoenix 21 project? Do you think has it been developing along the same lines?

Reply from JB: Well, the idea behind the project is to implement an Integrated Business System to the Steel Works, bringing together Maintenance management, Finance, Supply, Engineering and to an extent Human Resources as far as stage one is concerned. That's the key. We have a number of systems over a number of years all operating separately. Now we decided SAP gives us an opportunity to bring them all together. We believe it will improve to run the business and know about the business. Management will better understand the business. It will give us ultimate financial savings.

There is no change, it is developing along the same strategic aims - further we get into it the more we understand the benefits will be.

5. What major requirements drive your IBS as opposed to CMS, where it is stated that in SPPP CMS is driven by three main requirements - 'strategic', 'operational' and 'financial' requirements? Do you think IBS can fulfil some additional requirements?

Reply from JB: The answer I provide last time - planning advantages - cost advantages - and provide management greater range of information... real time, that is, more quicker than in the past. Since I last spoke to you we have developed the requirements' definitions and now well under the functional design and also looking at the question of integration. Supply people already seen some benefits, their integration with Finance for example. We follow right through all transactions so from the time we are purchasing goods and put them into place or works - that information concerning the purchase order will go through finance. If customer rings up and says "hi, you know, why you are not paying the bill", I will push a button and see exactly where it is in the system. This is something what they were not able to do before. That's one advantage. This is the first time they will embed with

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
finance. Also, some of the Supply and Maintenance functions are now cross over... we will get rid off that. We will have more defined areas of our operations. So, Supply will lose some areas and Maintenance will gain some areas or visa versa. Where we already understand place called manufacturing services section which is our service shops which do repairs around our works. There has been some doubt over many years who owns them whether they are a Supply function or Maintenance function. Just doing the functional design they made it quite clear that they own by Maintenance management. So, there is a change in dubious decisions. Most of thing we are doing at present and further we gets into it show us that the Integrated Business System (IBS) is going to have significant advantages and savings.

6. In what sense do you think the SAP system is powerful? Will it fulfil your requirements? What SAP modules have you decided to buy?

Reply from JB: In time, it will fulfil most of them. What we established is a theme that in "stage-I" which is due to be completed by 1 June 1994. In this "stage-I", we will establish a set of core activities which is essential for the business. We will first implement those. Gradually as we become better and understand everything that SAP provides we will widen the scope what it can give us. Our own feelings indicate that it is a way we will go for it. Recently, we visited some other sites where SAP system is implemented. They say that SAP is a continual learning experience. Once you get your basic business systems in there are range of other activities that you learn about SAP in time that provides you other business advantages.

At present, we have in our positions about two hundreds SAP's modules which cover various business applications of various functional areas. We don't expect to use all of those. We have until this year 30 June we determine which one we use and which one we will return. Only this week we went to Sydney [SAP office at Chatswood]. We looked at couples of other modules and we decided to trial those as well. So, final composition of the modules we have won't be determined up until closer to the end of the functional design, that is, by 31 May 1993. We are still experimenting them to some extent.

7. Have you satisfied with the requirement definitions' phase of the business processes? What about the functional owners, have they satisfied with the phase?

Reply from JB: Yes, I think so. The requirement definitions' phase looked at to answers very broad possible manner, the ways we are going to improve the business and where we are needing to have some change. First, we finish the requirements' definitions and ask them to go back and re-look at them making absolutely sure that we have broaden our approach enough. As we get into our functional design we are reasonably confident that our requirements' definitions are on the right track. We are still discovering. However, as we now got our hands on the SAP modules... we are still discovering other opportunities that SAP offers and is being included into the functional design.

[Question posed: Have the functional owners satisfied about the requirements' definitions?] The functional owners are becoming more and more confident about SAP and what it provides. In some cases it is quite exciting.
8. What responsibilities and authorities the functional owners do have in developing and implementing the project? What are the reasons of not considering their commitments as full time members of the project?

Reply from JB: The functional owners are not full time members of the project. They are there to assist and guide various teams on the project. They are there to assist the teams regarding management requirements, that is, where changes in policies are concerned. They are functional owners of their function. They are to ensure and to check on what teams are doing whether scope has been broadening enough and the integration can take place but they are not full time on the project. We have asked them in recent time to be more active because we are reaching the end of functional design where they have to sign off. Making sure what the teams have been putting up - really the team is putting up their work to the management - there are number of changes. Particularly, a number of instances in Maintenance, Supply and Engineering where functional owners have to make some decisions and make firm recommendations to management on business policy changes. So, we don't need them here all the time.

9. What major roles do you think will different functional owners including engineers play under the proposed system implementation?

Reply from JB: Once the system comes in, the functional owner will gradually have decreasing role. We will have a system in and system will play through various areas of the business. So, it will become a day to day activity. It will be the functional owners' to begin. It will be dictating the way in which business will run.

10. What are the major reasons of moving the Phoenix 21 office at Warrawong conference centre? Have you seen any dissatisfaction with the IT people on this issue?

Reply from JB: Because, we did not have enough room and we had to come here for training anyway. So, the object was to bringing the teams together and having training rooms in the same environment. We have seen this as a more ideal in operating than it has been. It will also significantly reduce the costs of our people to go to Sydney for having the training. It also brought both elements, ie, the IT people and Steel works' people closer together.

I have not seen any dissatisfaction on this issue rather they welcomed that. We made a far more progress bringing all together during the last two months.

11. To successfully implement your Integrated Business System as a whole what critical aspects would you give most consideration?

Reply from JB: One of the key things of the whole project is the input of data - that the existing data has to bring in line with SAP systems. One thing we are stressing is that only the best data should be put in. We put in rubbish into the system we will get rubbish response. SAP demands very closer attention to the very best possible data input. That's a problem we are about to discuss [this issue]. It's a massive job. We are not sure at this stage how many extra resources are going to be needed to do it. Who is going to manage it? We have a feeling we should manage it. And, at the various business units there is a
need for extra resources. The input of data - first class of data is the key to the success of the system.

12. In this multi disciplinary project, who do you think plays a major role?

Reply from JB: I have no doubt that the product is good. I don't have too many doubts that the Information Technology people, ie, technological input to our project... that good too. We are lucky in some way we are not the first one in Australia [attempting SAP] or in the World for that matter. We are watching other companies making SAP implementation. We have very close links with two of them who have implemented and had some problems. We have very good teams. We got some smart people in the operation. The most difficult job will be selling it to the users. In that regard we had a total re-look at what we call 'change management program'. We have just had a clearance to get twelve more people from steel works to join the project to continue with change management role. We are about to re-look at whole change management issues within the next few days. The end users' education... because of the size of operation we have... Everybody has a role to play. The key thing is in my position is to make sure that it's properly co-ordinated that everybody is going in right direction. I don't think - no one person is going to make the things successful, it's team jobs. We are going to use some of the people who had not in the program and who are currently on the program - will use them in change management as well. There is big selling job to be done in the immediate future.

13. To you, what is a cultural issue?

Reply from JB: Major cultural issue of this project is a question of change. It's big change than the things we had done in the past. Where the change management roles also come in. The key cultural issue here is that great majority of work force wants another major change. They have seen most of the change 'come and go, come and go". They are being asked to change whole range of things. There are some to increase productivity. On the plant they are asked to look at total quality management - the whole range of things. Here is another one is asked to do. This is something new. So, the major cultural issue is change how effectively you manage it. That's still going to be our most difficult job.

14. Why does it take a long time to manage a change? What roles do change management play in the implementation of your IBS? Who is now looking after change management issues?

Reply from JB: Because people don't normally accept change. There is always complaints about it. If you are shopping they change the barter on you... all of a sudden it disappears - like paint. A year ago there was a wonderful paint for... which you could put everywhere... did everything... wonderful too! People are suspicious of change, they simply don't like change, in particular, when management forces them. So, it takes time to change. Despite the fact that we have spent a lot of time improving communications... the communication of change... it is simple to say somebody look here is something new and this is how it is going to work and so on. It's change from another system - if you push this button you will get this. But, communicating change is never simple. Often they look at change as being a challenge. In that case there will be people who are going to say that they are going to get rid off a job and so on... there is another robotics system... push button... that means there will be fewer people required around the plant. In the struggling
economy we have in Australia at the moment where workers are suspicious about management... everyday people are loosing two thousand jobs... all sorts of these things. Change is very hard to sell. So, it's takes a long time to manage a change. That's what the change management program has to focus on.

The training manager for the program is looking after the change management. He will work with a team and with myself. So it will be a team role, he will have the responsibility once we determine and approve his program.

15. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from JB: Well, our requirements' definitions stay at our functional design stage and ... what SAP systems offer comparing them what we got now. There will be changes the way in which accounting function will operate. It [SAP system] offers improved accountancy procedures. It will bring some of our current procedures out of the dark in modern time. It will be accessible to far greater range of people. It got big value as far as financial side of things [are concerned]. We looked at in the first place - process costing is one area. It has big advantage in finance areas. It has big advantages for whole range of things... asset registers. Our young commerce people working on the project already believe that SAP system can provide a lot of benefits to the business. They find it is quite exciting.

16. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from JB: There will be always a continuous role for IT. They are going to manage the maintenance of the system. There will be further stages of the development of the programmes. There is always a close link between IT and ourselves as far as the computer operations of this plant - this operation is just one of them. They will have increasing roles in implementing SAP in other areas of business [ie, BHP's other business].

There is a plan New Zealand steel, Sheet & Coil product division and Whyalla [LPD division] will come under SAP.

17. Could you please give a brief overview of the communication procedures between the project team and higher level management authority?

Reply from JB: We have management structure. What we had is... we have a project I run that. We have a steering committee which has representatives of functional owners and some higher management that used to meet monthly and now meeting every two month. Then a group further up consists of four people who represent the management team... I report regularly to the steering committee group and higher management group. The manager finance and planning is the key figure and represent the management team. From the steel works' side of things he is a senior officer of the project. I report to him. We maintain on-going communication with the higher level management.

18. Have you seen any political struggle including interpersonal and organisational conflicts amongst various members of the project or functional owners? If so, what are the major reasons for such conflicts?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from JB: Yes, I have. They are still going on, not in a bigger sort of way as I mentioned before. In integrated system some areas lose control things for years and years and years... ownerships of little things... few stores here and few stores there... that's changed. People fought against that. There have been some political struggles and some of those are still evident but project itself will get rid of them. The reasons for these are people losing ground they had for years - "change". The system will not allow to keep those operations. So, we need to give a decision in managing that. Most cases to date people working on the system and the system itself decision for them. When it does not make it for them... or get a more senior manager decision... I don't anticipate in the short term... never somebody says OK, OK, you are right! Systems are right! I have to give it up! But, they don't. Yeah those are few struggles(laughter!). Those happen anyway. They are everywhere when there is a change.

19. From a management perspective how are you viewing the project development, including team works? Do you see any problem that can hinder your forthcoming functional design stage of the project?

Reply from JB: We have regular meetings with various teams, functional owners to review the project. The project is constantly reviewed. So, we know basically what's going on. Apart from that, I wander around to keep check on them. I talk to team members. People come and talk to me. I don't have any problem keeping a check on the project development. The only question at present is meeting the deadlines of completing the functional design. There were some thoughts or suggestions we might extend the deadline. But, a project like this you have to have deadlines. You have to work towards that. You can't say 'OK' look this week was tough we could not do it or so. The only reason of delay in some people's mind is that we did not receive the modules until about six weeks later than we thought we were going to get them. That imposed extra pressure on people. There was no way you can do the necessary training with modules. Then we had a X-mas new year holiday break. We are now really catching up with training. We are having a meeting this week with senior team to look at the question of the deadline. I don't believe it will change.

If it would not change Maintenance is the area who will suffer most. It is humanly impossible to meet these deadlines we will extend it for them. One thing we don't want to do is put too much pressure on the hand of the members.

Maintenance guys are little bit behind we might have to give them some lift on that. It was quite interesting when we were heading towards completing the requirement definitions. There were two areas - one group was ten days behind but in a week they have been brought up. That's what happens.

20. What are the possibilities of achieving the major delivered milestones of the project on due date?

Reply from JB: You keep hearing from other companies and other areas where they putting in this SAP system that they are putting their milestones back. Or, they got in on a date but have not still got it in - all this sort of things. People get concerns that we are never going to make it within the deadlines. The enormity of the project comes home from time to time...
the more they get into the system. The more they look at amount of works the data to be put it in - enormous items, you get that feeling. We would not be changing the deadline. We will making sure from time to time that we can reach the deadline. [Also we have to be careful that] we don't put the people under so much stress that we don't make it in a proper fashion. Still plenty of time. It is well over twelve months to go. We are going through... the next six months will be the most difficult time and particularly to get all the data in. The real key is then selling it to the users. The work most of these people on the project are gradually decrease during August/September this year in the project in some areas particularly in Finance areas. We will then use these people in change management programme. Nobody will leave this programme until at least 1 June 1994.

End users training... the key end users... core end users... they are the one will train further down the track. Nobody can use the system unless cleared as a qualified necessary user of the system.

We are already got some people from Supply area, for example, they have been progressively bringing in people from the plant. That is, key end users down here to have a look at and hand on the systems - screens are different of course. One of the key areas in Supply calls cataloguing and some of the people from cataloguing area this week came down and after a day here have gone away and become very excited the advantages the system can give them. They found the system can give far more information about stock where it is and its movement. So they go back to the plant talking positively and that's a part of a change management culturally. We deliberately at this stage played down the education question because we still have not got all there. We don't know everything but we are going to. The evidence is that there is an increasing interest in the plant and probably we are going to start a quick sell into various areas particularly to management in the next month.

[I posed a question: Is New Zealand Steel another division of BHP-Steel group?] Yes, it is a separate division to the Steel group now.

I thanked Mr Bown. The interview continued for an hour.

Informal Interview with Ms Kerry Reid (Team leader of the Finance Function - IBS Phoenix 21 Project) on 16 February 1993 at 10-00 am: Venue - Warrawong Conference Centre in King Street, BHP-SPPD, Port Kembla.

[This interview is tape recorded]

1. When did you become involved with the Phoenix-21 project?


2. When did you join BHP-SPPD?

Reply from KR: I joined BHP-SPPD in 1975. Then I left for a period of nine months in 1990. I started as a trainee - did my degree with the company - mainly worked with costing and budgeting.

3. What emphasis have you given in structuring the IBS project team? At this stage, do you have any concern in this regard?

S C Lodhi: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from KR: I have only control for Finance and therefore I am going to talk about that. Basically it has been structured around the modules within SAP. So we got people on the various areas such as general ledger, assets and costs. [It has been structured based on the SAP modules]. At this stage, just in finance, only concern I have is that people have not got a lot of experience in the areas they have been ask to design. I know from experience if they ask users today what they want in a system they will generate exactly what they are doing today. They don’t have any business knowledge to know any better. So there is a couple of areas where I don’t think that people have enough business knowledge to structure the out coming business system as something we want to move towards rather than copying today. Business knowledge I mean general business knowledge how to run a business... how you want to structure or what questions to ask someone to say how you would like to run this in the future. Because people tend to be limited by their own experience or existing systems knowledge. The other concerns would be number of people, (that is)... master data changes that need to be defined in SPPD to be able to feed into SAP system. I am a bit concerned about that the amount of work load - making sure that cost centres are right, the activities in cost centres are right, the product groups are right. We don’t have much time to spent on defining master data - we are just putting them into the system.

4. What major strategic focuses instigate the Phoenix 21 project? Do you think it has been developing along the same lines?

Reply from KR: Initially it has been instigated to replace costing and budgeting system. It has not been developed along the same lines. Now become a business system. Some of the areas such as Maintenance and Supply - they were not given the opportunity to evaluate the package as a normal way of going into a project. Usually you evaluate the package before you prototype. Usually the users should give consent at the beginning that 'yes' its' suit me or it can satisfy our problem and so on. That because SAP is not the best in all areas such as finance, supply and Maintenance systems. But it is a best integrated system. In lots of cases it has to be top-down decision that forced upon people. [Different industries offered best systems for particular area such as Mincom doing the best of Maintenance system and some other doing Finances better or in-house development and so on, the integration would be very difficult.]

5. In what ways does the implementation of Integrated Business Systems (IBS) facilitate the Cost Management System?

Reply from KR: Basically its' integration with Maintenance and Supply functions and one time input rather than what we have today. Everyone puts it in and everyone 're-puts' it in and there is no validations, because people could not supposedly main information in and there is no validation that it would be the same. So, really there is no integration in our existing systems. So some can puts one job number on a requisition and punches another number into an account payable - something totally different.

Costing people will get lots of benefits at the same time users will get more benefit too. Users of the cost information at today... they cannot follow anything back to a source transaction without like going through files of papers and not being able to find things. So there are no trace back facilities at all. The costing people at a loss to explain anything on
their cost reports to users who have queries - they have to go for a major search and they cannot find it and then they realise it's wrong then they fix it up. What it does is - no fix just changes future periods, two periods rather than correct periods - so many mistakes.

6. In what sense do you think the SAP system is powerful? Will it fulfil your requirements? What SAP modules have you decided to buy?

Reply from KR: Its integration facilities are powerful. It's not the best in any particular area but it is the best in being integrated. It will fulfil our costing and reporting requirements and P&L - those sorts of things. If you ask Maintenance people it may not fulfil their some of the requirements. For supply, they will be forced to accept the system because their current system does not satisfy a lot of supply information processing requirements. They will be forced to use it.

The Modules we decided to buy: Accounts Payable, Accounts receivable, General Ledger, Cost Centre Accounting, Job Order Accounting, Project Accounting, Process Costing, Assets Accounting, Operational Results Analysis - these are finance ones. There are lots of modules in Maintenance and Supply as well.

7. Are you satisfied with the requirement definitions' phase of the business processes? What about the functional owners, have they been satisfied with the phase?

Reply from KR: Finance one are not too bad. Because we are basically re-doing lots of our stuff. Though we are limited in some areas but I am satisfied with Supply and Maintenance is just half way there. As it is an integrated system, Supply and Maintenance requirements should also include all the financial and business implications of running Maintenance and running Supply. The real things they are concerned with are really the Supply implication... They are not worried about the financial implications or journal entry the behind return of a store. All they are worried about physically placing it back on a reck. I am not satisfied that the requirements' definitions can form the basis of an integrated system. But functional design is going to forced on them.

I think they (functional owners) have. Most of them have not got enough experience with SAP and its' integration aspects. We never had anything like this in SPPD so they might think they have done a good job but when it comes down to actually setting up a prototype they will realise how much was not covered.

8. What responsibilities and authorities the functional owners have in developing and implementing the project? What are the reasons for not considering their commitments as full time members of the project?

Reply from KR: Well, they are responsible for each of the phases that we go through in the functional design. They are the representatives of the area what they want in the system. Basically they have got the ultimate sley in deciding how the system will be put together. That might be on behalf of number of people or they may take it upon themselves just centralised that decision within themselves. I know engineering got another group assisting the functional owners has to sign off these things. Whereas finance is more centralised. In engineering there are lots of chiefs - has to sign off each document not just the functional owner.

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
I would argue that the functional owner's commitment should be full time in the project. But the reason why they think that is that there is not enough work to do. I really think that they should have been involved with the system. They are as almost like users to decide on these things as it is their... going further and further... away from the system they have to rely on people who has not got good business knowledge informing them why should they make decision and I don't think that is the ultimate. I think that they should have been assigned full time to the project. Specially some areas such as Supply. Karl was not made available to be full time if we needed him and it was just decided that they didn't. But I think that it was under estimated what has to be decided... the people on the supply team do not have the broad based business knowledge to make some of the decisions or to keep people informed of how it impacts across the business.

9. In your opinion what major roles will different functional owners including engineers play in the proposed system implementation?

Reply from KR: I guess it's their job to make sure that all the people in their area are aware of the system and committed to making available for training and if there is any departments have to be re-structured or reorganise - they should keep that as well. I think it's an organisational and managing role.

10. What are the major reasons for moving the Phoenix 21 office at the Warrawong conference centre? Have you seen any dissatisfaction with the IT people on this issue?

Reply from KR: Mainly to get us altogether. We cannot run an iterated project with people spread out over different areas not talking to each other. So we felt it is very important we are in an area we had access to people and people will aware of what other people are talking about. When we will start prototyping even more so that people are going to say, we are just be able to yell out "oh... hoo... do these do that" or we can get together and talked about these things. Whereas down in Warrwong IT office we were split into different area - not even the finance group are together. Everybody used to work their own little area not talking to others and when it did come to talking then they realised that we are doing integrated things. So mainly for this integration reason we moved to the Warrawong conference centre.

I have not seen any dissatisfaction with the IT people in this regard.

11. To successfully implement your Integrated Business System as a whole what critical aspects would you give most consideration?

Reply from KR: Training of end users. Prior to implementation prototyping, I can see, most important. Because, only then, when you start playing around with the system that you start realising what are the decision you have to make. How every transaction in the Maintenance organisation impacts on a ledger. You don't see that if you work only in your own area because that you are not primarily concerned with. How your area might impact other areas. So that before implementation I see prototyping is being the method that most people are going to have their eyes open to "what the hell all this is about" and so on. But, then, to actually implement it I see that the end users training are the most important.

12. In this multi disciplinary project, who do you think plays a major role?
Reply from KR: Well, I like to say that there is somebody but nobody got enough knowledge at the moment about the whole project of SAP. I think, as we do the prototype it will become obvious that the integration is a most important issue and none of us handle on that. We are getting a senior consultant to manage that prototype. I think it will become obvious that point in time that the major role have to be played in integration issue. Whether that's a... who or a number of us... working on that but it will be the consultant that brings the enlightenment to all the people how integrated the system is. You cannot make a decision without realising what impact you might be having in another area. At this stage I don't think anyone plays a major role because none of us know enough to be able to bring it to every one's attention that "if you do that I cannot do this". That's really significant or vice versa.

13. To you, what is a cultural issue?

Reply from KR: Anything that does not fall into your current experience. If you are trying to change people's attitudes or roles or anything, I would say they are cultural issues. Because you are moving someone from a point where they are comfortable in doing their job or at least even if they are not comfortable they know what they have to do and you want to change their attitudes, their job roles, their job definitions, their method of inputs, their thinking. [In other words], moving anybody from a position... is a cultural issue. Is that right! (laughter)

14. Why does it take a long time to manage a change? What roles do change management play in the implementation of your IBS? Who is now looking after the change management issues?

Reply from KR: People are comfortable about what they have. Scared of what they don't have... If you go and ask them they say "Hi if we do the same thing that will be fine". They don't have time to think about it, whether they are lazy or have not got enough time to think about it or scared - if they say something, it will mean more work or less jobs or whatever. I just think it takes a long time to instil a different philosophy in people.

End users training is most important. End user training is change management to me. Mr Steve Senders is looking after this at the moment.

15. What major roles do you think accountants will play in the future under the proposed system implementation?

Reply from KR: I think the role of accountant will go more away from manual type entries - the manual costing - the journals that sort of things. The number of people required for the Finance & Planning function will diminish because it will become fully mechanised. Whereas, at the moment, Finance is partially mechanised and partially manual. I think a lot of the entry work that the accountants are doing will be done by the users. The input of data will be done at the plant level, ie, at source. I think the accountants' role will change away from more clerical to more analysis such as managing an executive information system than that of number crunching.

16. What major roles do you think IT people will play in future under the proposed system implementation?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from KR: I don't know. It's a bit of a concern when half the developmental people are IT people. So that that knowledge just disappears from Slab and Plate who still have to run this system. I think it is going to be very difficult. I am not sure what management has in mind whether they will have IT people working for SPPD almost like contractors running the system at least for few years. Because until you built up that knowledge in and the end users up - we have to rely on a lot to the IT people. You see, in some cases such as accounts payable is being done by the IT person. If that person goes back to IT at the end of the project what will happen then, I don't know. There will be a system administration group consisting some technical people as well as application people. I am not sure whether the application people will be SPPD's people or whether there is a thought that some of the IT people who are more application orientated would go into that role. I don't know what will be the management decision.

17. Could you please give a brief overview of the communication procedures between the project team and higher level management authority?

Reply from KR: Supposedly, John Bown is supposed to talk to management. I don't know what he does. Then there is a steering committee meeting which is held every second month now. And, our functional owners talk to other management people because they are also in that management group. Then, of course, team has been asked to go and talk to various areas of plants to let them know what is this project is all about, what they are expected to do so. At the moment, I don't think it is a very much structured! The demands of teams have been more now then earlier. We have not got time to talk to everybody. So there is a need for more management. That comes under Steve Senders area. I am not sure at the moment.

18. Have you seen any political struggle including interpersonal and organisational conflicts amongst various members of the project or functional owners? If so, what are the major reasons for such conflicts?

Reply from KR: Well, just recently I have had several running with the project manager. They are not political, I think they are personal. I mentioned I was doing integration... we are doing functional design... I was doing a functional design paper on integration. To me, that my job and I said that it would be able to use as a management summary for the project and apparently the project manager took exception to me saying, I was doing management thing because that's his job to communicate with management. He talked surds of me in front of fourteen people! He just totally... what right I got to do it! We got some problem there but have no idea why he was angry. That's his reaction to me mentioning the word management. To me, being integration person doing functional design I thought I was with my right to do a functional design paper on integration. But apparently he sees that differently.

Several people would have noticed one of the team leader is trying to take over more responsibility in the project and always after to impress and shut up other people, it's not necessarily me. Other than that, everyone else seems to be shy away from... They don't want to get involved to the extent they should be involved. You know, they even, instead of taking their area by horns and saying this is what we got to do. They wait until everybody else organises for them.

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The bad stuffs are personal conflicts. We are going to have organisational conflicts because it's an integrated package. We got to think along that way. So, obviously, they are more constructive conflicts. They are positive things to explore. You know, people are exploring the package because we are starting to say "yah this is not your role it's ours, then you start looking at it oh... hoo... sh... this is the way package does it all we have to reorganise". They are all positive that necessarily have to evolve out of a project that is so integrated but there are other negative conflicts which are more personal ones. The organisational ones are inevitable and necessary.

[Intervene with a question: whether age or service longevity has any impact on personal conflict]. No, only salary wise in a couple of areas. Different people were doing the same work being paid thirty thousand dollars a year different. They are essentially supposed to do the same thing. So there is a conflict in Christmas when they see others got paid higher than they are. No reward for project people where you are required to be high level thinking and so on.

19. From a management perspective how do you view the project development, including team works? Do you see any problem that can hinder your on-going functional design stage of the project?

Reply from KR: Only relative newness in some of the areas... That's why this prototype will bring everyone up to a level of understanding. That is not there now. People underestimate the complexity and interrelationships of this product. They are still looking at their respective own area, not looking at the big picture. The more people get into the system and start playing around become more conscious. Some of the teams have not had chance to play around the system because they are doing training and they are still in a stage where we [finance and planning] were in twelve months ago. [They say now] "what's the hell going on" (laughter).

20. What are the possibilities of achieving the major delivered milestones of the project on due date?

Reply from KR: Well, functional design will not hoping. I don't think whether finance can even achieve it! Supply and Maintenance can't, I am sure. I still believe we can still achieve the actual implementation on 1 July 1994. Because IT only ever been involved in-house development which has a different structure, lot of it on build and test and not so much on requirements' definitions and functional design. Whereas we got the system already in built. I think we are underestimating the amount of time needs to be spent on functional design. Because detailed design is not a lot of building. It's there, it has to be tailored by setting up tables, things like that. I just feel that if we skimp on the functional design we can skimp on the whole project. We never explored the full potentials of the product.

21. Have you prototype issues, such as system resident and non-resident cost management hierarchical structures, for cost centre accounting, product costing, management reporting and various operational and strategic analyses?

Reply from KR: We went through some of this recently. I will give you some document on this...

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22. Do you have anything unique that you have experienced during the development of the Phoenix 21 project?

Reply from KR: Well I think it's being good that the way... we got a cross functional people both in functional areas and discipline like IT and Slab & Plate working together which has never happened in the past. That's pretty unique.

We got a pretty unique project manager who does not have any functions... independent! So people's type issues.

I guess it is unique that it's a top-down decision making we have been told to do this. From an accounting point of view we can see that there is a more benefit for accounting. But you would find that SAP system would less satisfy the requirements of Maintenance and Supply. May be it's a great business system, but they not really in the business of being business, they are in the business of maintaining equipment. So we have our eyes open, I am not saying that the decision would have been any better if we did it more cross functionally in the first place. I don't even know what are the alternatives are out there. Are there other companies that have the same concept of SAP that could have been evaluated. It's really driven by finance and costing. And then say, this is the best business system but we aren't Maintenance and Supply or HR people, we almost led the charge and told them what they have to do - that pretty unique that happened.

Further discussion:

About the change of Group General manager: Our new general manager came from the RBPD, Newcastle, and RBPD doing SAP so he is aware of SAP. Graeme Parker before he left explained why he is committed to SAP. We understand that the new manager is just as keen as to get some forward direction of business system than what we are today. Even just him getting to know his own business he has been asking questions that existing system can't answer. SAP would have been answered had we had such a system earlier. I think it is going to reinforce him that our systems were standalone, isolated and not good enough to manage a business of the twentieth century. So I can't see him being a negative person. The more question he asks he will more convince that we are doing something positive. I suppose it's a bit of worry when you change the management. Plus, there are a whole hip of other management initiative going on at the same time that will impact on our project. We are out of the mainstream and if people are taking the decisions formulating some direction and we are of here isolated then there is a danger. I guess that we are captive what's happening. Functional owners should keep eyes on that making sure... Further discussion: (refer to tape)

I thanked Ms Kerry Reid for her time. The interview continued for about an hour.

Interview with Mr Geoff Shaw (Senior Accountants - Ex- project manager Phoenix 21 Project) on 26 February 1993 at 2-00 pm: Venue - Commercial Building, BHP-SPPD, Port Kembla.

[This interview is tape recorded. However, unfortunately last part of the tape has been destroyed]

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
1. When did you join BHP-SPPP?

Reply from Geoff Shaw (GS): I started working with BHP-SPPP in 1967 as a commercial trainee. I have been here for 25 years. I completed a commerce certificate at the Wollongong Technical college, then I went to Wollongong University and completed a B.Com degree.

2. Do you have any involvement with the Phoenix-21 project now?

Reply from GS: No, I have not got any involvement with the project anyhow. As you know I was involved in originally establishing the project that was as a costing project to replace our DISC costing system. While reviewing our old costing system, at that time, we saw that there were major changes happening in towards Integrated Business Systems and towards commercial software packages rather than in-house developments. So, that was a new direction that SPPP has had to consider. But, my original brief was on the costing system. Once the decision was made that it was going to be a totally Integrated Business System with Maintenance, Supply, HR and the other areas that would delay the implementation by twelve months that was the time when I decided to leave the project.

3. What major strategic focuses instigate the Phoenix 21 project? Do you think it has been developing along the same lines?

Reply from GS: I think the major focus initially was that we did not have good costing system. We could not understand what is driving our cost and we could not get good cost control. In an internationally competitive environment we are trying to compare our costs particularly the end of the processes we are looking what is the cost per tonne of steel against what our competitors cost per tonne of steel. You need to have a very good recording and measuring system to be able to compare that. Our systems lacked a lot of credibility - very old system. The allocations of costs to products were very suspect and being able to understand cost behaviour through the system as to whether cost variable is time variable, tonnage variable or fixed cost, were very difficult and were very time consuming. You really need to be very specialised in cost accounting to be able to do it. Average people who are responsible for cost here are very difficult to work with the cost system. When we did our survey we identified three major... Our systems were 15 years old, old technology.

We found that cost accounting principles that we employ was quite sound. So it was not because of the cost accounting principles so much as the credibility type issues. I used example with you before that there were no controls over the uses of job numbers. A person could use another area's job numbers and therefore, destroy the credibility of the system. That made very difficult in that the costing information for an area that was corrupted and would be long process to try to check every cost. Modern technology, of course, the computer system these days you can stop wrong charge of authority.

After we develop Cost Management system that was when additional issues came up that to move for a commercial software of Integrated Business System rather than standalone costing system, standalone Maintenance system and standalone Supply system. There were lots of individual systems having all integrated so that you collect information once only at

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source, validated at source, trace back through computer system. So it is a very streamlined system.

Has it been developing along the same lines: Well, I am not close enough to comment on that at this stage. I know the SAP product, which is a good product. It has been used specially in Germany and all around the world by many large multinational companies. SAP has been very successful because their product is good. It is also because of the integration of the different modules. It is a complex system and, therefore, you need to have a very good understanding of the system. We know the ability of SAP, especially in Australia to support a product like SAP was a concern. I don't know whether they have overcome Certainly, they are supported well in Germany but support in Australia was a major issue. As far as the implementing the SAP product in SPPD in its standard form, one concern, I think, the terminology of "Big Bang" approach we are always advised that lots of risk associated with a "Big Bang". One of the best ways to do it is just bringing a module and gets that working and put on another one so that limit the risk. We are advised to that. Now I understand that we changing our whole of our cost centre structure and job number recording system. We have been told that we have to do "Big Bang" implementation - that is a concern. The other concern would then be internal one within SPPD that we ... I guess not a concern rather... we need to make sure that we manage right. It is a complex system. You need to make sure that you are building up your own in-house expertise in the SAP system. In the future that with the people you building up as expertise must make sure that you are not loosing this expertise from the company. Trained experts are very very important. You can't lose out people - must have a very good knowledge base. People who will have that knowledge will be very important as system administrators.

4. Do you have any concern in regard to the current structure of the Phoenix 21 project?

Reply from GS: [We have skipped this question.]

5. In what ways does the implementation of Integrated Business Systems (IBS) facilitate the Cost Management System?

Reply from GS: Perhaps, you don't need a computer system to achieve the objective of CMS. You probably even don't need an IBS. You can still get your strategic, operational and financial information from other systems but it would be much harder. Certainly, when you have an Integrated Business System then you have a number of advantages such as collecting information at source which is used in three (various) major areas. So what I am using my financial results for... I am also using information that driving financial result for operational performance measurement. I am also using that information for our strategic decision making. So we can use consistent information throughout the areas.

One of our own experience was that we are using (getting) different information for each of those major business users [Finance & Planning, Supply, Maintenance, & HR] and sometime, therefore, we are taking wrong decisions based on wrong information in the first place. So I would think it certainly helps not absolutely necessary. Without it we can still have very good non-financial performance indicator. But it makes lot more easier with a true IBS.

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IBS goes further than finance and planning. Through which information is shared right throughout the organisation. Whether people in the Supply organisation, Maintenance organisation or Human resource organisation or whatever the area everybody is looking at the same information and it's not being distorted.

6. Could you please indicate some major historical events in regard to the development of the Cost Management System (CMS) in SPPP?

Reply from GS: There is a number of ways we can look at it. You got some dates of the things there that we have done. You know about our DISC system. Prior to the DISC system we got a fully absorbed costing system which was non-mechanised system (manual system). Introduction of DISC system in 1978 is our first move into a computerised costing system. You got the manual and access to the manuals. All essentials behind that the DISC system by going into direct costs, contribution margin analysis. It was bringing in the first time the concept of standard costing system. Trying to get more towards responsibility accounting. People were responsible for incurring the costs they were not responsible for "Rates". If, (for example), labour rates or material prices change that's really outside their control. And even control of the usage. (Sales variances due to international changes in competitive prices or some other events are seen uncontrollable and even unknown to the organisation. Today...). So bringing in the standard rate in costing system I guess that were very popular at that point in time. Direct costing system were very popular and the DISC system approached to mechanising our costing system. There were many events which you can pick up from the green book.

Planned Value Control (PVC), though it was not a major change, was part of our first move into Total Quality Control (TQC). That was when we were working with Neapon Steel. Their TQC consisted of three steps - one was Integrated Quality Control which was aimed at improving quality of product, delivery of product, customers' satisfaction and so forth. Another one, what they called Master Planning which is really a Business Planning, in many ways we have not been doing proper business planning, that was starting in that direction. The third one was Planned Value Control (PVC). PVC was about continuous improvement... always getting better whatever you do. Getting at through into your costing system. That was at a time in 1986 just after that there was a major re-structuring in BHP Steel. I think it was 1985 when BHP Steel (before that it was Australian Iron & Steel Pty Ltd) broken up. A decision was made it would be a part of BHP Steel International Group. Though subsequently International dropped from the name it was just BHP Steel group. A complete new division was set up the old Port Kembla Steel works were then become known as Slab, Plate & Product Division. Newcastle became known as Rod and Bar Division and Whyalla became Long Product Division. So each of the major steel operations in Australia became product line's divisions - so we (as a BHP group) are not producing the same product. Say, our products ranges were plate, hot strip coils and tin plate. Marchent bars and rail products had been phased out and became operations of LPD. That was a major re-structuring. Associated with major re-structuring was a different emphasis was given on self-management. Prior to that lot of the planning, strategy formulation, decision making was within head office. In 1985 the rationalisation, part of the review, by BHP to put those responsibilities back to the individual divisions. From that point of time we do our strategic plan.

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But if we looked at the Planned Value Control when we looked at it I guess we identified the weakness in the DISC system was not totally that the DISC system is wrong. But the management was failed to enforce the DISC system. We saw PVC as an opportunity to instil the concept of continuous improvement into our costing system. Over time... all of our TQC project... when our small group activities working... people thinking how they can improve their operations. Every time we got improvement we get that improvement reflected into our budgets and costing. So it was a part of integrating those physical things that were happening throughout the plant into the costing system. We saw it was a good opportunity to do that, each improvement and reflected to lower our cost. It (PVC) is still in use. But I am not quite sure about the regularity of it.

There were some changes in DISC 1988 by Gabriella Serray and myself. We changed standard costs back to actual costs. There was a major principle in the DISC system which break up the costs into the period costs and variable costs. We change that to overhead costs and Direct costs. It was in 1988 the division had some AS$300 million period costs. The concept of the period cost was that all your time variable costs were shown as a period cost and variable costs are tonnage variable cost. The concept I guess was misunderstood in that everybody seems to think that your period costs are overhead costs. This is just one example. Another example, Blast Furnace operating 24 hours a day where tonnage output could vary, where labour is considered to be period costs, its time variable costs. We did not like that approach what we thought we really want to know what is our direct cost of manufacturing. We make major changes towards concepts like users' pace and charging and getting the costs against the product that is produced. I think there a paper what those changes were.

There are numbers of other things happen is that I guess, things like when Johnson and Kaplan wrote about Relevance Lost, it was catalytic for some of our thinking in the process here. It's many years now our costing system were driven entirely by our need for financial information. It was driven by statutory requirement. Our tax law drove lots of things the way we do our costing. As we know that financial information is not right information for decision making. We could not justify having two systems one for financial information and one for strategic information. I think the computer system today - both sets of information are available without having two entirely two different sets of books or systems.

We, first, looked at what we actually need cost information for. We did that quite independently of anything that what Johnson and Kaplan had written. We identified five major reasons, I had a slide, and made a number of presentations on this. As we discussed these five major reasons over and over, we came clear that some of these can be combined and there were three major reasons - that we know today - strategic, operational and financial. We were satisfied that there were three reasons we need costing information for. Then we had to make sure that we had system in place which would enable to do that. We have not use towards 1986/87 what we call a Total Performance Management system. Initially PA Consulting was involved in it. We looked at what is our KPI's. If you looked our operations the monthly performance in a non-financial way we looked at output, consumption of energy, labour productivity and other things without putting any dollars on it. That was our first recognition of non-financial. I think it was the Activity Based Costing.

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Concept every body was taking about that at that time made us to think about the strategic side. What product should you produce? What is your product cost? Cost allocations? Etcetera.

You know that SAP system is built around activity based costing which is good. The early base of our activity costing we thought the real power of Activity Based Costing was in managing activities that the more accurate product costs a side benefit of it. These days there have been a lot of big move towards activity based management - managing those activities. That's become very important in looking for a new system. There had to be a system that can satisfy our strategic, operational and financial requirements' fulfilment at a time. We recognised we would like to buy a package that would do it rather than doing it in-house. We recognise that we need to involve the whole business not just the costing system in isolation to other systems. Because without having integrated and transfer of information one system to other system - that was our final conclusion. As you were aware of that the emphasis from our costing system to Integrated Business System - taken some twelve to eighteen months. Management looked at the strategic side of it and recognised that which way we should go for it.

7. Could you please give a brief overview about the budgeting processes in BHP SPPD?

Reply from GS: The budgeting process and planning process - every company does it differently and bottom up approach or top down approach. In SAP one of the thing is attractive is that when they say budgeting it is top down. When they talk planning is a bottom up. In many ways... it is the way we operate it. We do on a bottom-up basis, but, of course, if the results from the bottom up are not satisfactory then management needs to take some action. Directed by the situation in many cases when you did the bottom-up approach - certain assumptions or costs get built into budget which are not acceptable to get the return that we required - needs to be reviewed and need directions from the top management. So I guess that very briefly what you wrote right about our approach and our budgeting is done for twelve month's periods. Now we get our projection what is our market going to be so we have to make assumption on the tonnes. And, from the marking department we get the selling price - we get from our supply people what they believe will be... for energies will be. We get assumptions all areas - our industrial relations people project what will be our wage increases. Will there be any wage increase in certain areas. So our budgeting is a very thorough process of looking at costs of all inputs. Certainly when we use bottom-up approach we looking at budgeted cost - Budgeted costs for our operations. Each area is responsible for putting in their budgets - what labour, materials - they will use. Then we calculate budgeted cost per tonne of product. Budget selling price & market forecast - budgets.

In SPPD when we talk about budgeting which is really equivalent to planning in SAP. When we say budgeting is very much bottom-up. In SAP their terminology budgeting used to mean top-down approach to management.

[From here on, unfortunately I could not retrieve anything from the tape. However, our discussions were on the following questions]

8. Is your PVC concept still in use?
9. In what sense do you think the SAP system is powerful? Will it fulfill your requirements?

10. Have you seen the documents on requirement definitions? If so, are you satisfied with the requirement definitions' phase of the business processes? What about the functional owners, have they been satisfied with the phase?

11. What responsibilities and authorities the functional owners have in developing and implementing the project? What are the reasons for not considering their commitments as full time members of the project?

12. In your opinion what major roles will different functional owners including engineers play in the proposed system implementation?

13. To successfully implement your Integrated Business System as a whole what critical aspects would you give most consideration?

14. In this multi disciplinary project, who do you think plays a major role?

15. To you, what is a cultural issue?

16. Why does it take a long time to manage a change? What roles do change management play in the implementation of your IBS?

17. What major roles do you think accountants will play in the future under the proposed system implementation?

18. What major roles do you think IT people will play in future under the proposed system implementation?

19. Have you seen any political struggle including interpersonal and organisational conflicts amongst various members of the project or functional owners or users? If so, what are the major reasons for such conflicts?

20. Do you have anything unique that you have experienced during the development of the phoenix 21 project?

I thanked Mr Shaw. The interview continued for an hour.

Interview with Mr Chris Cooper (Functional Owner - Maintenance Engineering - IBS Project Phoenix 21) on 8 March 1993 at 4-00 pm.: Venue - Maintenance Technology Centre at old Plate Mill Office, BHP-SPPD, Port Kembla.

This interview is tape recorded

1. When did you become involved with the Phoenix 21 project?

Reply from Chris Cooper (CC): I joined this about November 1991 when the project was only a costing system project. It was a year after the Phoenix 21 project was initially conceived of by the finance people. We had to do a hell of a lot of very strong arguing with the accountants to let us be part of it. We had to argue that Maintenance should have some representative in the original Phoenix 21 costing project. It is only when we got a new manager of finance (Jim Hall) we actually achieved that.
2. When did you become involved with the Phoenix 21 project? When did you join BHP-SPPP?

Reply from CC: I joined SPPD in 1975. Since joining I was working with Maintenance.

3. What emphasis have you given in structuring the IBS project team? At this stage, do you have any concern in this regards?

Reply from CC: I have given a very strong emphasis on cross functional team. I have actually put in it four of the key people that I have in Maintenance. I have argued for a long time if Integrated Business System... if done correctly - it is the only way this company can get a good grasp how this company will control the business. Some of the philosophies we started with this project need to be maintained and the basis for design of business system. [A copy of the direction, strategies, and tactics for SPPD's Business Systems has been given to me]

Yes, I do have concern. It is very much project driven. They have not got any concept of quality of the end results. They don't have a struggle for it. It has been said you got to finish by this time. You got to finish with this cost... don't care... what you are doing.

There are no clear scopes of work they could deliver. This is a good business system and, therefore, you deliver it. Usually when we do a project you must deliver that item. Usually cost could be over or under and the time can be under or over. This project is different - the cost will be this, time will be this - what you can deliver vary depending on the time! [More discussion - reference tape]

4. What major strategic focuses instigate the Phoenix 21 project? Do you think it has been developing along the same lines?

Reply from CC: Firstly, uniformity of philosophy across the business. Secondly, it provides the ability to change the business - to change the culture of the business. Thirdly, it provides understanding of accountability.

5. In what ways does the implementation of Integrated Business Systems (IBS) facilitate the Maintenance management?

Reply from CC: It will facilitate us providing integration with Materials... the costs of Maintenance... so I can relate very closely the costs of Maintenance work with the actual work being done. So we can start to do cost/benefit analysis immediately.

6. Could you please indicate some major historical events in regard to the development of the Maintenance Management System in SPPP?

Reply from CC: Major events were - first major event was introduction of Personal Computers (PC) back in 1983. With the PC administration allowed Maintenance to start to document really in an accessible way. Those PCs allowed us to document Maintenance activities in a way that allowed us to analyse what we are doing. Maintenance is very high data activity... it was not possible to analyse without those PCs. Number two event is that the advent of a Work Management System across the whole division which is controlling Maintenance. That was achieved in two phases. One phase was the searching for a whole BHP... a fully integrated Maintenance system... which was done in 1986. It was
proved to be unpalatable from the view point of cost - too much. It was going to cost us AS19 million dollars to put in a Mainframe Maintenance system in 1986. What we opted for across the plant, a PC based Maintenance system at a cost of AS6 million dollars in 1987 - which we are still implementing. That system was first implemented as a standalone basis around the whole plant. We have about 200 users on PCs and we have developed that as a next stage integrated PC network about 250 PCs operating across the plant and it's used now to communicate work load from plant to repair people. Next major development would be Phoenix 21 project as far as information management is concerned. Costing and budgeting in Maintenance was done purely outside the work of Maintenance Management System.

All these were IBM PCs and program is developed in-house- which is still in operation.

7. In what sense do you think the SAP system is powerful? Will it fulfil your requirements? What SAP modules have you decided to buy in your area?

Reply from CC: It is powerful. Because it allows auditability of data. It allows consistency of data provided I set up the data correctly. It allows full integration of data. That is, I can only recording data once.

It is not fulfilling our requirements fully... One needs to understand where sources of costs occur... two things - material and labour. SAP will govern very clearly - control the labour outside the materials but it will not co-ordinate the labour because we do not have the labour component being integrated into SAP. HR [Human Resources] is not part of it and, therefore, we will be able to identify the same person at least three times - once in maintenance, once in HR system, once in OLT.

We have to have interfaces, but there is no guarantee that I able to have data entered only once and have people identified only once, because they don't talk to another in a single database fashion.

[Question posed: Why hasn't you considered SAP's HR? Mr Cooper provided some documents on the issue.]

8. Are you satisfied with the requirement definitions' phase of the business processes? What about other functional owners, have they been satisfied with the phase?

Reply from CC: No. Requirement definitions' phase ended up with an excellent document in Maintenance. It probably the only time we ever really being able to look very closely at finding the business processes in Maintenance. Really we ended up with a document we can use in many areas not only in the SAP development... but I really think that because we are buying a package system - we could have achieved the same outcome as part of investigating the package. Because we put together very knowledgable people in designing requirements' definitions phase they could have looked at the package... We may have avoided having to do a lot of detail business process analysis. So, on the one hand, I am saying it is good they have done business processes analyses. On the other hand, I am saying it may not have been necessary to do it for this Phoenix project.

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I think other functional owners are satisfied likewise as far as I am concerned. I also think some functional owners may have felt that it is little bit too rushed (such as Supply). I am not sure they could do quality job.

9. What responsibilities and authorities the functional owners have in developing and implementing the Phoenix 21 project? What are the reasons for not considering your commitments as a full time member of the project?

Reply from CC: That's a very broad statement. [Mr Cooper provided a copy of the steering committee report on the issue].

The role of functional owner: The objective of the steering committee represents the SPPD's Maintenance client of the Phoenix 21 project - we have the following objectives. 1. Achievement of the Maintenance benefits; 2. Acceptance of the functional design; 3. Communication & education to the Maintenance users; 4. Acceptance of an implementation programme; 5. Acceptance of the delivered and operating system. These are the objectives put down for functional owners by the steering committee. The functional owners accepted it. There is a mission we have to ensure that Phoenix 21 project provides a computer based system to support and improve the Maintenance process at SPPD.

My basic reason is - that it... for a customer to be also supplier. If I am going to be a customer I should not be a manufacturer at the same time. I should also be able to separate from the group those who produce the product.

[Some further conversation - refer to tape - for my reference]

10. An integrated business system requires extensive interfaces within various functional areas. Do you have any interface problem in your area?

Reply from CC: An integrated business system does not require extensive interfaces because the project was justified on the elimination of interfaces. Otherwise you would have kept the Maintenance system we had originally. Data entered at source you don't need interfaces.

11. To successfully implement your Integrated Business System as a whole what critical aspects would you give most consideration?

Reply from CC: Training of users - simplifying users' system interface - achieving quality of data input at source - ensuring that the system at its outset put some more emphasis on providing a quality business analysis at its outset rather than a broad based system. The functionality they are going to put in place must be quality functionality (inscription). We cannot put in place sub-standard functionality in order to put in place the business system. It is better to make sure that we really put in place those core functionalities we really need to run the business at its outset then put on the additional things rather than trying to do the big picture straight way.

12. After the implementation of SAP system, do you think will you be needing more people or the existing personnel can handle it?
Reply from CC: The SAP system will introduce the centrality of data management. It also introduces centrality in data description. We will need to have a group who will manage the "data definitions". From that point of view there will be additional jobs created but it will change the way in which we administered the present system. There will be a lot of data conversion and file maintenance that is done in the current system - that work now will be managed through a central computing systems' group. I think the net result will be that there will be no more people - the same people can handle it.

13. In this multi disciplinary project, who do you think plays a major role?

Reply from CC: At the moment, the project manager and the integration specialists play major roles in the project. Computing system experts also play major roles. It is also worried me whether those people should play major roles.

14. To you, what is a cultural issue?

Reply from CC: The cultural issue is one that changes the way people works - in a very fundamental way and in a permanent way. The culture of the organisation is, to my mind, leads me to think of the permanency of the way people do think. Therefore, the cultural issue is something associated with the permanent way people think. If you want to change culture then you are changing 'permanency' of the way people do things. The cultural issue is very important. You asked a very good question. I think it is important to make sure we deal into the depth of what people do. Usually cultural issues when they have to be changed are those issues which make a lot of resistance and a lot of clear understandings of the way people thinking. I can give you an example, a major cultural issue in Australia that to work with electricity you need to have some very in depth understanding and training of electrical work. Culturally in Australia there is a big understanding that says you cannot wipe down electrical knowledge in small components. It is very unsafe. We break through that culture barrier which equates training to safety in a broader sense. We have a lot of electrical people in this organisation and elsewhere who rely very strongly on their role in society being through the knowledge and training.

15. Why does it take a long time to manage a change?

Reply from CC: I don't necessarily hold that it takes a long time to manage a change. It depends on the size of the change, numbers of people involved in the change, the amount of culture which would be affected by the change. In other words, how deep this (the change) goes into the way people think in work. In other words, how long you have been a Labour voter. If you have been a labour voter all of your life time, you don't change easily, because it's a party culture. If you swing from one to another every time when voting comes around, then, it is easy for you to have a change.

I can give you an example, we are presently going through changing the culture in Maintenance to have people chargeout their costs based on the work they do. In the past, they would have been able to chargeout their labour costs to the job just by writing a job number on their time sheet and not worrying about whether they have a job or not. Now, a cultural change or the change will be you cannot chargeout your cost unless you have a job. If you did not have a job in the morning then you cannot say my cost will build up in a particular area. That's a major cultural change. That's business now - the way we do
Maintenance work. That's cultural change. We started to put that in place in September last year and it will be in place in May this year. So it has taken six to seven months to bring about a cultural change which is a major change for people, being able to charge the customer whatever they like to... now only being able to charge the customer.

16. What major roles do you think will different functional owners including engineers play under the proposed system implementation?

Reply from CC: I don't think the project has worked out well enough what implementation means and what functional owners will do. But, as far as, I am going to do is to assure that data conversion has been effective. To assure that we implement Maintenance management side of things gradually across the plant so we don't have "Big Bang" approach in Maintenance. Making sure that every department has had time to understand what they have to do. Thirdly, making sure that all users are educated... use the system prior to costing being charge out via SAP. It is very important - we got to do all before cost is charged out through SAP.

17. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from CC: If accountants are fair they will be working far more closely with management to provide management with the analysis of the data that provides a clear understanding of what the company is doing financially. I think that the accountant will be much more closer aligned with management and what they do... The system will support more the users and what their information demands are. They won't be doing very much work, not that they do very much now. They won't be doing very much work with supporting the users of the system in cost analysis, the system will do that.

I have a philosophy that managers don't spend money. It's the users, the people down on the shop floor, who spend the money. Managers only have the ability to guide the direction in which people spend money. So the accountant will not be associated with the expenditure and the control of the expenditure of the money any more. They will be reporting more on the way money will be spent and guiding policy on expenditure issues.

18. What major roles do you think will IT people play in future under the proposed system implementation?

Reply from CC: IT people will manage the system and administration of the system... also, I think, data conversion.

By the way you have asked what accountant will do after the system implementation. During the implementation the accountants are going to have a big problem or a major problem - that is, how do they assure that the business skill is able to achieve continuity across no-SAP to SAP. Because SAP will introduce or has the opportunity to introduce major changes in definitions of what we presently attached costs to. For instance, I can give you an example, I believe, I can introduce a major cost reduction in Maintenance cost by introducing SAP. Because I would define Maintenance differently. If I define half the costs of Maintenance as it presently defined by the system as an operating cost then I will immediately halve the costs of Maintenance of this division. If I halve the costs of

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Maintenance of this division "how and now haven" we ever going to understand where this business lies with respect to Maintenance costs.

It is a major dilemma at the moment. When they introduce SAP they don't report as the same way as they have done previously. How do we ever understand the continuity between what has been and what will be.

What they (accountant) will have to do is that they have to manage what going to be different in the new system and assure there is continuity between the old and new. To give you an example, in the accounting spare, if I introduce SAP I defined the asset differently then the accountants have to be able to translate management from the old to the new. Say for instance, I categorise the working capital of this company such that only half the product which... let me explain it another way - working capital comprise two things, one is the work-in-progress. Another part is maintenance spares. If I introduce SAP I said... oh... ha... we are going to define working capital differently... we are going to define only half the maintenance spares as working capital and other half maintenance as a non-accounting stock. This company's working capital level was about AS150 million. Immediately I am going to take off that working capital about AS30 million at the stock level of AS60 million. In May 1994 working capital levels AS150 million and in June 1994 AS120 million. I will not change the cost structure of the company at all but I will change the way you define it. Accountants have to manage that very carefully. Also, I can change this company... at the moment, say we are spending AS290 million a year on maintenance, the management wants to reduce that. They are comparing us with overseas companies who spent about half that.

They have very similar facilities but there is an element of difference in definitions [what constitute costs]. That is, what defines AS290 million. Overseas companies have a tendency to say that we will not include in our definition of maintenance all improvement work. Because overseas government looked at capitalisation differently. Overseas steel companies are not expected to capitalise their... different 'expensing' capital vs expenses. Therefore, particularly, in Japan it is easy to Japanese to capitalise their improvements. But there is a tendency in Australia, because we have to capitalise improvements, there is a tendency to say they are not improvements these are just maintenance. If I go out and design something better on the plant I pay it for maintenance. If I say it is improvements, then, capital (assets), say you got to capitalise that but I don't have any capital money to spent on it.

In Australia, if it is capital it is treated differently. There is not much easy excess to capital money to do it. But, in overseas companies there is easy access to capital. Therefore, when you talk to a Maintenance man in Japan he says... oh... yes... well... all it's just maintenance costs not an improvement in it. So they have about AS200 million.

In overseas companies if it is for improvement they capitalise it. But here since I got to do it differently. It's treated as maintenance not capital. So the overseas companies can reduce their maintenance costs by treating as capital.

What I am saying is that the overseas companies may not have the same definitions of maintenance. Now, what I can do when I introduce SAP I can change the definitions of Maintenance and overnight I can cut if I want to say that all of people around the
department doing maintenance work can be called operating labour. They will not come under the category of Maintenance and, therefore, overnight I can reduce my maintenance costs by describing them differently. SAP Maintenance has a different definition... we will have a different cost.

We are still talking about your question seventeen - accountants will need to able to monitor those differences. If management will say if they come out here SAP will come up with a AS50 million differences in maintenance cost - they will be asking the accountant "how come it is so".

Costs as a whole for the company would not go down but need to be managed properly - defined differently. SAP offers you to define things differently. What we got to do is that if we define things differently... that we define them in a manage sens, in other words, how the organisation define them.

19. Have you seen any political struggle (including interpersonal and organisational conflicts) amongst various members of the project or owners? If so, what are the major reasons for such conflicts?

Reply from CC: I don't think so. When you say political struggle I think each person in the group has got his her own drivers with which s/he got to live with. Project manager has got to make sure project finishes on time to a budget. As a functional owner I got to make sure I get the best out of the project. Some 'political things' always be on-going in this sort of project. I will always say don't you cut your deliverable short. You make sure you delivered to me the quality result that I want. And if you spent too much time or too much money in doing that I don't care because that's not my responsibility. That's the way we should set something up. We just got to make sure that no one group becomes dominant in that area. [He supports the idea that political struggle is inevitable, constitutive - the way they do things]. No interpersonal conflicts.

20. What are the major reasons for moving the Phoenix 21 office at the Warrawong conference centre? Have you seen any dissatisfaction with the IT people on this issue?

Reply from CC: One reason was that it was not desirable for this project appeared to be own by IT. It is more important that it's a Slab & Plate project and hence it is located at Warrawong Conference centre.

No, in relation to this project there is no dissatisfaction with IT people.

21. Could you please give a brief overview of the communication procedures between the project team and higher level management authority?

Reply from CC: I think the communication... few people who wanted to guide and judge major higher level management issues... it's between the project manager and financial manager. Only few people making guiding decisions. There is steering committee that has difficulty to understanding what role is and there is very little accountability at the project steering committee level.

22. From a management perspective how are you viewing the project development, including your functional team works? Do you see any problem that can hinder your forthcoming functional design stage of the project?

S C Lodh: PhD Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Reply from CC: They got a project plan they working to. We divided all the functional areas they got to develop into priorities. I work very closely with the team particularly last week or so. One of the things you got to realise is that this team only finished training in the last week and a bit. They just started forming up their views and directions. They got a bar chart to work to. There are milestones in the project. It may get changed a little bit. The team has said we need to finish our functional design by end of May 1993. Now, last Friday we have been informed that we got up to end of March... major reductions in the program... that got to suffer some consequences.

Yes, emphasis over project completion and cost rather than quality of product. Time frame - I don't think people can complete in the time frame. [Emphasis on quality]

23. Do you have anything unique that you have experienced during the development of the phoenix 21 project?

Reply from CC: One thing is very new - the project which does not have a clear scope of work. The scope of work develops as you progress. That's one of the unique thing I discover. You cannot predict in any accuracy what it going to be look like - what you have to do as you do it. That may be a facet of the nature of work we are doing.

24. What are the possibilities of achieving the major delivered milestones of the project on due date?

Reply from CC: Due date of the project will hold. But the milestone is not defined clearly there will be re-definition of milestones to suit the delivered date. So, question really should be, yes. I think, there is an excellent possibility is that a milestone will be achieved by the due date. What that milestone is will only be defined prior to the due date... The scope of work changes to suit the time frame.

[Some further discussion]

One of the overriding things that I am saying that this organisation has come to grips with is that very significant business decisions are made in a very detailed way by just setting the definition of a single field in SAP will define the way the total organisation is structured. For example, there is a decision about how the plant field value is defined in Maintenance.

Important things in forming "plant" structure you had people at middle or lower level management in - setting up a system which able to decide whether company in the future will be structured to support the centrality of Supply, centrality of Maintenance or whether you could decentralised it if you wish. In other words, particularly in Supply an important issue is that SAP could have been set up so that every little department can set up its supply area.

System can prevent people from doing certain things - system can prevent me from ordering components directly.

I think in trying to implement the projects, yes there would be some behavioural problems in regard to who own the information in a sense of who is accomplishing what task. But, once it is settled the system will give this company the ability to really allocate responsibility to individuals. Because I can now say with the system that a job will not be
done unless I approved it. And my approval - the system will only give that to me through my sign on. Only I can sign on - if somebody else signs on they cannot approve those jobs.

System gives us that ability very clearly right down to the bottom level responsibility - that is a major benefit of the system - that's the area they has not looked at yet. Designing the responsibility and accountability right down to the bottom person who makes the decision.

No six Blast furnace - commissioning 1995 - the project has not been authorised by the board yet. Initiated - the board will not authorise until May. Expected project completed by 1995.

In 1982 the end of open hearth steel making was also co-incised with the major change in the steel making around the world where there was a surplus capacity of steel making around the world... steel works commenced major long term rationalisation of plants and reduction in cost of manufacturing - major reduction in employee numbers. In 1981 steel works employed 21 000 people and 1983 they reduced over two years they reduced about 11 000 people. At the time there also were major changes in steel industries in the whole world.

Steel manufacturing industries around the world change from being - reduction in consumption vs overdevelopment of steel making capacity. There are lots of third world steel making companies change from being steel consumers to steel producer such Korea, Japan [very much steel producer]. Britain went from grand producer of steel to poor producer of steel. So we had a major change in 1981/1982. There was over supply of steel to the market. We embarked on a major reduction. It was a major event.

The end of open hearth by the way is consistent with - BOS steel making is thirteen fold improvements in technology. In other words, it reduced the number of people requires to produce steel from thirteen to one. Open hearth is very labour intensive. Whereas BOS is not labour intensive.

In 1985 business unit philosophy introduced - major delegation of responsibility and authority - Commenced in 1985 and finished in 1988 and was held up by the major takeover thrust by "Homesaurt".

There was a major takeover attempt in1986/1987.

In 1987/1989 Major Improvement (updating automation) in hot strip Mill.

Re-commissioning No 2 Blast furnace due to taxation reason. Would not have been able to claim the capital development of No 2 Blast furnace for investment allowances unless we commission by certain date.

The interview continued about an hour and a half. I thanked Mr Cooper for his co-operation and time.
There is NO p. 413 in original document
Informal Interview with Mr Geoff Armstrong (Phoenix 21 Project Member Costing Team) on 5 April 1993 at 10-00 am: Venue - Warrawong Conference Centre, Port Kembla.

[This interview is tape recorded]

Conversations: Responsibility reporting... what you call Cost management structure... still exist... but this cost management structure is going to be the additional tool. We have also special analysis... analysis of activities... it is not yet understood at SPPD at the moment of how these additional tools would be used. Responsibility hierarchy cost centre hierarchy

We brought an expert from management reporting. His name is Mr Gary Bull to look at from a higher level the issue of management reporting. Part of his function is to look at our basic process is to build the initial budget and we have actual of course - then we do some variance analysis to compare those. We also got revised budget process. At the moment our revised budget what we call the planned values is revised on a monthly basis. What we have is a bit of conflict between revised budget for profit forecasting and revised budget for management control. So we have asked him to look at this whole area. To provide framework to let the design team to come up best use of SAP.

[Question posed: what constitute direct vs non direct costs. How will these be treated?]

The way we are approaching that all costs will be planned as variable for the first year of SAP implementation except depreciation. Because there is no standard rule that we can use in SPPD. So we are going to use variable for first twelve months. At the end of that time it will give us to test whether a particular cost is a variable or fixed. Therefore, the first year of implementation is really going to be testing year as far as budgeting goes.

Some of the cost allocated to product... some will go directly to operating result analysis. Depreciation will be charged wherever equipment is... so an administration centre has a building or some equipment which extracts depreciation cost. The word - 'overhead' is a bit misleading to us.

1. Could you please give a brief comment on the idea of 'Cost Component Split'? Is it a new concept to you? How does it differ from the existing handling of cost elements?

Reply from Geoff Armstrong (GA): It's a new concept to me when I started learning about SAP. Basically what it does is that at any point of time you can take either any activity whether it is a product, process or service... you can design it to view costs of any activity at any particular point of time [ie, aggregation of cost at any particular point]. Say you have a number of cost centres charging to each other and that are all made up of the same three cost elements... say they have three cost elements - labour, stationery, raw materials, but they charged each other... [the interviewee took a piece of paper to explain it]. There are two types of cost component splits: primary cost components split and secondary cost components split.

Secondary cost components give you the ability to split costs based on activity by cost centre and specific activity. You have to run a specific transaction in order to get this view and produce a specific report. It lets you analyse total costs in different ways. Our old DISC could not do that. These cost component splits are very useful management
information but the cost accountants previously asked to do some of these tasks as part of their job. They had to do that at a bit higher level. Now with this facility we can do it at any activity level automatically.

In the past it was basically a manual or PC based analysis. We had to develop an understanding of how to use this by ourselves, then the next step would be for us to interpret that for the accountants or final users. So, they have the concept of how to use this because we just give it to them. We can do this cost component split at any level for each cost element.

2. In what way your recent functional design can improve the existing costing system?

Reply from GA: Well, the functional design itself is just the means to the end. The whole investigation process... the whole project they are going through is about... that the investigation we currently have... coming up with ideas and with procedures for improving that... getting rid off inefficiencies. We are just streamlining every aspect. In the requirements' definitions we looked at - 'these are the things we want to happen'. The functional design simply looks at SAP and then gives the plan in that how do we fulfil the SAP.

3. How do you integrate the Maintenance Management costing with the cost centre accounting? Because, the Maintenance management demonstrated that they will be using project structure (RK-P) instead of cost centre structure in designing their hierarchy.

Reply from GA: It would not be conflicting because they are doing it simply to come up with the budget. They are trying to come up with a budget at each functional location. What they will come up with is a budget, say budget for BOS at each functional location. We will then have to manually, or by writing some kind of program, take data out of these and do cost centre planning. You are quite right that there is no integration in the first place. They are using this as a tool to capture the information of their budget at functional location level. We will then sum up that at the cost centre level. Then, at the cost centre level we will do our Maintenance plan. This is part of our budgeting... they are two separate functions. You are right there is no integration. That's for the budget.

When it comes to 'actual', all the actual will go against orders and they will be closing orders for each job...

A further question was posed: "When the issue of cost component split will arise can you then see and aggregate all costs?"

Reply from GA: This comes back to the question of what we define as our cost component splits. Because if you think about it... if you have a component split which shows your labour and Maintenance costs... it might not add up to Maintenance. What we are saying is that labour excludes Maintenance. We could do both but it's a matter of setting up the system.

Another question was posed: "Do you see any difference in terms of benefits for going RK-P structure instead of RK-S structure?"

Reply from GA: Well, it just a technique. They [Maintenance management] are talking in terms of functional locations. There are ten thousands of functional locations. If we go at
very low levels, that is at the items' level, it is possible to get about one hundred and fifty thousand functional locations. If they are going to prepare a budget for these locations... say you have the Hot Strip Mill (HSM)... HSM is broken down into four areas - furnace and a couple of others... then furnace is broken down into seven areas... then each one of these areas is broken down into a couple of other areas... it goes down to about five levels... So they have identified the functional locations. What they are creating is a project for each cost centre then sending the order costs to cost centres. But, in budgeting there is no integration between RK-P and RK-S Cost centre accounting. To use Maintenance data for budgeting and cost centre accounting we have to set up an automatic function to sum up for our purpose. So this is just a technique they are going to use for their budgeting. There is no automatic integration for the budgeting side. We have to somehow get into those for updating cost centre planning.

It is because of systems reasons that Maintenance is going for RK-P structure. We don't want to have ten thousand additional cost centres and that would make our cost centre accounting very cumbersome. If we want to run months end transactions to calculate and allocate variances... currently if we are going to have fifteen hundred cost centres... now if we have to add another ten thousand cost centres then you can imagine how bigger the calculation is going to be.

We are not going to use 'plant field' in Cost Centre Accounting. RM will use 'plants'. I don't know what the decision is at this moment in regard to Maintenance, whether they are going to use just one plant or many. However, they have to use at least one plant. If you use multiple plants I think there are some difficulties in creating Bills of Materials (BOM). I think routing can be done plant specific - so if you use same BOM in different locations you have to re-create one of those plants. But I think they are going to go with one plant.

4. Which RK approach of Cost allocation methods (such as assessment, pre-distribution and activity based) will you be adopting in charging out costs from one cost centre to another?

Reply from GA: Majority will be activity based. For small number of system required things, distribution methods will be used - not the pre-distribution method.

We have about twenty thousand different assets records... depreciation charges coming from different systems, that is, RA system through the cost centre. RA system is sitting by itself. One transaction you run that does budgeting for you. You set up your assets... we got our depreciation rule... run these assets... it goes into cost centre planning... it has specific depreciation cost elements... does the planning for you... and then at the end of each month you run another transaction which posts the actuals... [et cetera].

5. What role PVC department would play in your future costing system?

Reply from GA: I think the new system will give them some different ability to what they currently got. Again, roles of PVC in regard to budgeting and costing are going to change... What they are doing currently may change. There will be more work involved in some areas. There will be additional analysis they can do. For other areas certain tasks may disappear because those will be done automatically. All these are under discussion at the moment. Again, we brought Garry Bull into the project to look at this issues - to set for us a framework about management reporting.

S C Lodh: Phd Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
6. Have you chosen the mode of cost centre planning? If so, would it be centralised or decentralised? In other words, would it be based on cost elements or all cost elements at a time?

Reply from GA: It's going to be a combination... For labour, depreciation, special planning such as by-product will probably be done centrally. Rest will be located to highly trained users. Our ultimate objective is to decentralise... all costs such as stationery... typically all the operating costs will typically be decentralised for planning purpose. For first year it will be a matter of technique. We are investigating those at the moment.

Two separate issues: one is the tools SAP system got and the other is who is actually going to do it. From SAP's point of view most of the costs will be planned decentrally... physically will be done by small group of people, ie, by the design team. So, from this point view it will be done centrally... We have not decided yet how users would do this. Next level will be to decentralised to experienced users, then next level will be to plant end users and so on. We will gradually decentralise the planning.

7. Have you set up the activity master file?

Reply from GA: We have not yet finalise it. The task is being given to the management accountants to identify where they want to change any of the standard determinants by the end of April. Then we will set it up. We know we have a design of how to do that. I expect that majorities of our current standard determinants will probably be become our activities.

[Question posed: Are you setting cost centre what SAP's consultants suggests, that is, a separate cost centre for each activity?]

Reply from GA: Say, for example, if a product cost centre uses tonnes as its activity... most of them will... then there is no reason to have tonne as the activity for all of them. Multiple product cost centre will be using one activity. If it is an operating centre - they would be using operating hours. We have the concept... same activity used in multiple places... will have same activity name... Again, a reason behind this when we are going to do something like secondary component split it's a combination of tables controls... the combinations of activity name and the cost centre. You can imagine if we have... if I want to know in finished goods what the cost of service centres hours - all group together - if I have an individual activity for each service centre then I have put an individual entry in this table for each one. That would be become very cumbersome. What we can do, instead I can put one entry then mask it for all the cost centre - it would then do it automatically. So, our design is driven by some of the SAP requirements.

[Question posed: Do you think technology dictates the design?] 

It does. Our functional design of cost centre names, cost elements, cost centre ranges, activity names have been driven to a large degree by how we can set up these using SAP tools. So technology available (SAP) has driven us to design these in a certain way. In this case it's not a limitation - it rather gives us benefits.

8. What Key Performance Indicators (KPI) that do you think your costing system can identify?
Reply from GA: The way we are going to handle KPIs is... another type of activity called statistical activity in SAP system that's purely information purposes... it's not a matter of us identifying KPIs. Again, Garry Bull has been given the task of identifying what KPIs need to be identified at each level. For example, General manager needs different set of KPIs to the superintendent of BOS... Cost centre reporting allows us to do those. It gives us the mechanisms for reporting those. However, Garry is going to analyse those... you can get a list of those from him.

9. Is there any impact of the split of fixed and variable cost on the cost management system at SPPD? If so, what are the likely consequences?

Reply from GA: We tried to make a decision what's fixed and what's variable. We gathered a number of different opinions lack of experience in doing this... basically all the cost fall under variable. We made the decision that all costs will be planned as variable costs with the exception of depreciation for the first twelve months. At the end of that time an analysis will be done to determine what is variable and what is fixed. So first twelve months will be considered as trial period.

10. Could you please provide a brief overview on the use of costing system information at SPPD?

Reply from GA: At a higher level, it is going to be the performance measure at all levels - from superintendent to general manager. The other one - various analyses that we come up with, a lot of the analysis tool is unavailable at the moment or not available automatically... component splits, different views, trend analysis... what people are now looking for. So, one is performance and other is analysis at higher levels. Again, the analysis part of it... we probably have to wait another couple of months until we sort that out.

Another one would be profit forecasting, that is, RK-E module. These tools have never been used in SPPD before. Therefore, it's going to be a learning process, people have to be able to conceptualise what they can use the tools for. So it's a bit of "chicken and the egg" - a kind of... we are going to investigate and figured out ourselves then say: Is this useful or not? Then we will try to explain it to the users how they could use it. It's a bit of a circular process.

11. At this stage of the project, what important aspects will you consider most in the development of your IBS including cost issues?

Reply from GA: The one which comes up is... what is SPPD's concept of reporting... that's basically what we have asked Garry Bull to do. There is no clear statement available on that at this point. Revised budget is the best example, really.

Framework for SPPD's reporting has to be clearly identified before we can go through our design. That's exactly why we got Garry Bull on the team to develop. Recently, he is talking to lower level (shop floor) people and then he is going to look at general managers, AGMs, managers, superintendent and all the way down. He is looking at SPPD's reporting requirements. So I see development of a reporting framework is very important for the design of CMS.

S C Lodh: Phd Student, Department of Accountancy, University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Informal Interview with Mr Garry Bull (TPM team - Phoenix 21 Project) on 23 April 1993 at 3-00 pm: Venue - Commercial Building, BHP - SPPD, Port Kembla.

1. When did you join BHP-SPPD?
  Reply from Garry Bull (GB): I joined BHP-SPPD in 1973. It is now 20 years.

2. When did you become involved with the Phoenix 21 project?

3. What major area were you involved in with the project?
  Reply from GB: More specifically, I am involved with management reporting. I am looking at, from a higher level in terms of definitions & content, what actually we should be reporting... What is the key items...

4. Could you please indicate some major historical events in regard to the development of the Total Performance Program (TPM) at SPPD?
  Reply from GB: TPM is initiated from Steel Group. Basically followed from the divisionalisation in 1985... I believe TPM is very much directed at supporting the development of decentralisation and responsibility and accountability throughout the organisation. So we involve in multitudes of business units. TPM did not eventuate as a formal program. As I said in 1988 when consultant named by Marakon Associates from USA who among other things developed Total Performance Management program, to be deployed down to divisions and business units.

   [Question posed: whether there was any institutionalisation of a separate department for TPM] ...within the other divisions it was purely taken on board within the existing structures of the financial department. It was also talked by various divisions with different levels of commitment and resources... For example, Rod & Bar did very much so and puts lots of resources into it. Up front - it looks like we are the only one created a specific department for it which was in 1990. I applied for this position & took the position. Basically it was eighteen month's developments at group level before it came down to the division - deploying down to the business unit and departments. [In 1988 it was instigated at the group level].

5. What major strategic focuses instigate the Phoenix 21 project?
  Reply from GB: Major strategic focus is cost reduction. It is obvious... cost is a critical success factor within our business... Our competitive position - our cost will determine our survival in the longer terms.

   [Question posed: How will IBS improve your TPM?] It is another question. I suppose you could say that the way in which... through the better recording & accessibility of cost information in a decentralised manner... at the moment you could say cost reporting very much centralised in the financial area. SAP will provide the local departments with the
ability to monitor & interrogate their cost more timely fashion as well as to higher level
detail. At the moment, paper chase involved in chasing problems... generally would be the
biggest barriers for chasing costs.

6. In what ways does the implementation of the Integrated Business System (IBS) facilitate
the improvement of the TPM?

Reply from GB: TPM & TQC are two different things. TPM is strictly directed at the
development of management performance systems. It uses the principles of TQC. In other
words, principles of statistics and involving people and continual improvement... But it
was directed at managing performance, I suppose, which then leads to focus on KPI -
reporting KPIs... then linkage of performance to compensation at the highest level. RAC
the highest level cash flow type measures... higher level target performance measures in
the organisation level which lead to shareholders' value.

So it was a framework only. It was a framework system it was all about setting up a
framework saying that back in 1980s there was a focus on increasing the shareholders' value - how we are going to do that. This approach would be something which would satisfy or generate performance related indicators (KPIs) for increasing shareholders' value. But it was through customer value, employee value, community value - not that all these have been developed - the major one only the financial results (we are developing)...
The financial results are generated through non-financials. Examples - Steel track linkage chart (a copy is provided) - which will give you performance linked... that prepared in 1989/1990. It was Du Pont chart linkage - but it has non-financials.

So in terms of anybody's business system or Phoenix 21 (intervention with a telephone call)
- the role of the development of TPM is coming close this year. So Improvement of TPM
has the philosophy, we believe that has already been deployed to the various people. It's
really - what Phoenix is providing is, potentially, - in terms of reporting Phoenix is not
going to achieve a great deal. Because current business performance reporting is still be
done off line to Phoenix. The large proportion of data is still not held in part of or
integrated - but the capabilities are suitable for the top reporting - to develop TPM.

One of the issue I am looking at is to see what are the deficiencies and whether Phoenix
can, at the stage trying to understand, achieve those requirements - reporting format
functionality requirements.

7. Could you please indicate the usage of various levels of Key Performance Indicators
(financial and non-financials) at SPPP?

Reply from GB: In terms of Phoenix, I suppose, developing our Total Performance
management... one of the key issues we had is that measurement of KPIs. One of the key
principles of TPM was to maintain a focus on what you are actually measuring... how it's
relates to business plan. So, the basis of TPM is check process within a PDCA (Plan, Do,
Check and Act) cycle. Where our Business Plan represents our planning - could be
planned value process - the area we need to improve was... how we check against... how we
are going for such a plan... So KPIs have been develops from those plans. In other words,
if our main objectives are cost reduction, delivery performance and at all levels you should
have a measure - KPI. We are measuring KPIs at levels - right down to the foreman level.
[Question posed: Is there is any possibility to get some information about KPIs] I think if you look at Cox (1989) thesis you could get some fair example of KPIs. I would not change that necessarily that much. They are still appropriate. KPI - how dynamic they are? The question has been made is - I see the difference between KPI and KPD. One possible direction is we should be considering KPDs (Key Performance Drivers) along with KPIs...

How we view these processes. Performance indicator has been considered as... not something developed - KPI would be the outcome - it could be the cost drivers... could be quality drivers... delivery drivers... flexibility drivers... cycle time drivers. You could say all those can relate to dollar terms but in operational people don't always see in dollars - they don't improve things in terms of dollars. Dollars are the outcome of improvement of cycle time may be set up time - change with caster for example.

[Question posed: Whether the KPIs would stay at shop floor level] ... some measures are already aggregated up through organisation or dis-aggregated down, for example, obvious one... things like "overtime"... We move away from absolute cost - overhead costs - performance management in terms of cost planned is more directed at dollars per tonne... process costing - absolute dollars. Which just I believe the recognition of volume is major driver of cost of manufacturing.

8. To you, what is a cultural issue?

Reply from GB: Performance enhances the culture. Cultural issue might be to do with... we have a cultural which focuses on performance - improvement and controls... I think control vs improvement probably the major culture. I see - even though a higher level management preaches improvement they "actually manage by control". For example, focus is on performance against budget. If you focus on budget - the development of budgets can involve an improvement process. But budgets are presented in direct dollar's terms - but the actual performance may be or should be done by some other measure... In certain circumstances you may not be able to achieve performance in terms of budget. May be they are improving the performance but the dollar budget is yet to be succeeded... the focus is still be performance to budget. You know - whether it's favourable or unfavourable. That's an issue. I have been involved in variance performance reporting from financial system - I don't believe - just because it is favourable that's good - sometimes it can be bad as well. That's failing take into account the statistical thinking and variations within performance - just because this month is favourable!

9. Why does it take long time to manage a change?

Reply from GB: Good question I don't have the answer. I can give my opinion. Could be... in many respects... in the case of the Phoenix project there has been some lack of management belief that the new costing system will give us like results. That's backed up by... I can give you an example by Dickson &... "New performance Challenge World Class Manufacturing". They talked about breaking organisation... getting away from organisational cost accounting system, has been fundamental source performance measure... I think here, there are some higher level managers believe, I believe anyway, that improving cost- the accuracy of cost accountant - won't necessarily improve the performance. I mean the accuracy is not the issue. The issue is understanding the linkages of performance. Understanding drivers... Understanding what actually does drive the

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business plan. More accurate numbers for say help you to get there - if system does not give you accurate numbers but new numbers - might benefit. Understanding cause and effect... Historical cost is an outcome of events. Gaining business knowledge how business works and improving the business... There is other pressures too. Lot of organisational change may cause some delay - the recession would have also may be slow down the decision process investing such a development. Even they might say at the same time that there was a strong push that because of cost, etc, we had to go with it. Expanded scope also delayed the project.

11. How does your PVC relate to TPM and TQC?

Reply from GB: (Laughter!) You want me to give you some diagrams. I will give you some. I am involved in a project - business process immigration, where we asked ourselves the exact question. We are revisiting in terms of the work - Phoenix 21 - international reporting - which was to try and understand how our processes did fit together... That was I prepared in conjunction with other people. Practically which outlines the relationship between PVC process, budgeting, Business Performance reporting, PIMs (Process Improvement Management), forecasting, business planning, etc.

12. To successfully implement your IBS what important critical aspects would you consider most?

Reply from GB: Most critical aspects going to be the users' training. Change management process of getting people accept the new system, initially anyway. Because the worse thing can happen is that the early life of a project like this - system will generally dictate its value to management. Whether it's a good or bad system for first six months - whether it's being worthwhile or not - that could vary depending on, I think, there are lots of functionality. People should not lose sight or should make simple rather than complex - which is an issue I suppose.

13. Have you seen any political struggle including interpersonal and organisational conflicts amongst various members of the project or functional owners or others? If so, what are the major reasons for such conflicts?

Reply from GB: Yes. It is normal. I have not spent enough time directly myself with the project team. It still seems they are functionally apart. I could be wrong - but what I believe in an alternative sense is that they still sitting back in their own offices somewhere and designing and prototyping this independently - without any contact with other sections. We must admit as well that the environment they have down there and contacts they do have are far - it could even go further, I suppose.

14. Do you have anything unique that you have experienced during the development of the Phoenix 21 project?

Reply from GB: My background is non-financial. But I am looking at both the financial and non-financial.

The uniqueness is that it's a package. It is the first time we taken a major development like this utilising package software rather than in-house developments. Due to this, probably the biggest interpersonal and organisational conflict is develop. There seems to be a great
conflict with IT - IT then (previously) was just a part of the division... now IT is a separate entity. I think - we need to revisit this issue - Greater barrier people working with IT. The value of these people to this organisation would be different because reporting structure has changed - they are part of BHP - not part Of SPPD.

I still believe SAP is a transaction based system. It's not a reporting system. It does not provide standardise approach such as structured reporting format which can allow manager to go into a screen to look at how much KPIs and so on. They could drill down through them. EIS (executive information system ) style of format... it's still really dependent on somebody else getting data out and putting into PC preparing some charts for managers.

There is a cultural issue there... Needs to be overcome in terms of all level of managers. Not for the highest level of management - who still is not interested in utilising PCs on a regular basis as a function with exception.

Majorities of operational managers don't understand the variances such as delay, feed and other complicated variance analysis, although used by financial system. It's a major issue... lack of understanding. At the divisional level there was a focus on that...

Now the key measure will be in the area... production department will be trying to develop beyond delivery performance & customer's satisfaction. But the main key measure will be the delivery performance for the division. You can't devolve (throw) that for every level, not everybody can have a delivery performance measure. Functionally within the processing unit, I mean, say Caster can have a delivery performance of being right product on time to the Hot strip Mill and to the Plate Mill, then Plate Mill can have a delivery performance measure how long it took them - cycle time - internal measure of delivery performance at the lower level. Another measure, if you like is... KPIs are supported by key performance drivers at one level - next level KPDs become KPI - achievement of plan at various decisions.

We designed to make 100 slabs... 1200 divided by 300 people for certain grade 95 of them have different thickness... Another measure is marketing - market share is going to be a KPI for the division - total or product level.

Another one is output - production throughput... our product is very much volume driven. Our performance to achieve our rated output or capacity utilisation or asset utilisation... there is a driver to improve that. You can't - issues driven KPI - in some respect if we achieve targeted output that we set ourselves - to me it is no longer becomes KPI... become performance indicator.

Assets beaning - which is a combination of capital & R&M - that should be measured by dollars per tonne basis principally at the divisional level. It's very much linked to our cash flow decision. It's not return on assets rather how much we are spending on assets and how much we spend on capital. It's a capital intensive industry. We have to spent lot of money to stay in it. Asset spending or capital spending - R&M being part of our assets - R&M represents 25% of our costs.

There should a strong linkage between KPD and standard determinants. A standard determinant could be an equipment hour.

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Informal Interview with Mr Kas Zoszak (Project Manager Developmental Team - Phoenix 21 Project) on 18 May 1993 at 9.30 am: Venue - Phoenix 21 Office, Worravong Conference Centre, BHP - SPPD, Port Kembla.

[This interview is tape recorded]

1. When did you join BHP-SPPD?

Reply from Kas Zoszak (KZ): I joined BHP in 1967. So it is now over 25 years for me with this organisation. You must appreciate where IT came from - BHP IT is separate from BHP. We are separate entity now. It was from 1989. So I would say that IT is providing consultancy for Slab & Product Division.

2. When did you become involved with the Phoenix 21 project?

Reply from KZ: I got involved in this project when it was in finance scope. I was a section manager in Phoenix 21 project, at the time John Denis was finance manager. I got involved full time - October 1991. So I started with financial scope - and I was actively involved in the change of direction of the project to its present state. There have been a number of moves to trying to do that. They were never successful.

3. What major area were you involved with the project?

Reply from KZ: Basically I see myself as being ensuring that they are using correct processes on the project. That we are using the right development methodology - people adequately knowledgeable of that methodology - so I have to produce dialogue specifically for Slab & Plate people those who are not familiar - to get the structure right.

I am responsible for plan/schedule - don't necessarily do that myself I get other people does those... assessment on consultancy - between both IT consultants and SAP consultants.

4. Could you please indicate some major historical events in regard to the development of IT Division and its relationships with SPPD?

Reply from KZ: In 1989 IT was classified as a separate business unit. At this moment, IT belongs to IT division - independent business unit. We have our own board - separate entity. SPPD is a customer to us. We cannot make a profit we go broke. We have other BHP customers such BHP-transport, petroleum. SPPD is our biggest customer.

Our time is charged to this project at an agreed rate. We are dragging other consultant from BHP IT. We charge them as well.

5. What major strategic focuses instigate the Phoenix 21 project?

Reply from KZ: As you are aware of that the project is instigated from Finance and Planning because of the dissatisfaction with the existing DISC system. Nobody understood how the cost came about. They could not get the detail information... were not well...
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understood... largely a batch system - not on-line system [interruption - a telephone call for KZ]. So the project initiated from Financials - dissatisfaction with the timeliness of information, quality of the data, various managers were not getting the information they really wanted, OK. With the financial scope of work it was addressed those sorts of issues... what we are doing we are replacing DISC with SAP but still rely on the data being used same as before. So where is the improvement? There is not much improvement in that regard. That's what really pushed us for an integrated approach - Supply is integrated with Maintenance - finance is integrated with others - that's where the improvement lies. Integration is a big plus. It gives you opportunities for rationalising the functional units and streamlining procedures, the processes - just to make things more efficient.

6. Why did you exclude buying HR modules from SAP International AG? Do you have any interface problem with SAP system in any regard?

Reply from KZ: We have not excluded them. We took a deliberate decision not to include payroll and OLT (On-Line Timekeeping systems). for payroll finance people are happy with that. They are very good system. They are recently developed. They are on-line systems. HR still included in the scope, though not as integrated as with other system - that's part of the problem. HR are planning to get benefit from SAP. They need to mange the work force more effectively. So what they have done is they are proposing one of the organisation planning modules for keeping master data for employee details, also training management modules. They are working on the interfaces with SAP and also with the component of the existing systems which don't get replaced.

7. In what respects do you think SAP system is powerful?

Reply from KZ: Certainly, integration is one of the main feature of SAP. If you look at the product world wide - though subjective perception - the range of products SAP covers and set of modules they offers, if you look at the competitors of SAP, there are some USA based companies probably but any company in Australia, not even by MINCOM who might be good in certain areas such as Maintenance and others - not very strong in financials - not well integrated... VHR as well... they are strong in certain areas. Whereas SAP is a typical German system - very recent technology. The stories that we hear from other organisations when they install SAP are that they continually find areas for improvement for additional opportunities or benefit of the product. You got flexibility to change it. It's a table driven system. It is not too different to in-house development because you still need to go through all the analysis steps. You want to maximise the benefit of the product because it is flexible - if you are to maximise your benefits you got to tailor your own needs. It has got lots of options. For instance, ten different ways of doing or solving problems - all has different implications - that what would be the challenge for us at the moment.

8. To successfully implement your IBS what important critical aspects would you consider most?

Reply from KZ: I think it is important at this stage for the functional areas to understand their requirements. It's important to work as a team. Previously we had a situation where functional areas tend to work independently. Now there is implications across the board - the integration issues. Our prototyping exercise is a bit cultural shock for the teams. They
produce their requirement's definitions for functional designs. They thought they are talking each other but all the chicken comes home during the prototype exercise. The final issues of total "in-issue", for instance, Supply. They surprise that really it is their responsibility to own this table. It has got impact to the other areas. Those sorts of issues started to come out.

In a large implementation like this, especially to maximise the integration benefits, I think, you need to go through very structured way with a large team. You have to get to go through with some disciplines documenting what's the designs going to be. Establish issues and total in-issues as I mentioned - who owns the data.

The ownerships of tables going to be a cultural issue - that is, something to realise. At the end of the day we got to realise that the people who are going to support the system on an on-going basis. It's a Slab & Plate system now it does not belong to finance and planning, does not belong to Supply, does not belong to engineering - it's a SPPD's system.

9. Have you seen any political struggle including interpersonal and organisational conflicts amongst various members of the project or functional owners or others? If so, what are the major reasons for such conflicts?

Reply from KZ: I think this is one of the thing that played in the project. I have played those several times. When organisation of the project grows - when the scope changes from financial to IBS as you call it - I certainly jump up and try to get all sorts of people on the project. I think it is important to bring people together especially a large project like this that can work as a team. It seems to me there are some resentments from Maintenance - I don't know what it is. It seems to me there are some resentments from functional owners - they are not full time on the project. Perhaps they feel that they don't own the project enough. They don't seem to be involved enough. Perhaps they are not consulted enough. Recently there are some resentment with IT. Because they are now separate from Slab & Plate. There seems to be some sort of concerns that the project is a Slab & Plate project - BHP-IT should not be driving too much. There are all sort of concerns walk along as well.

10. To you, what is a cultural issue?

Reply from KZ: Let me give an example, to date people has been used to receive good service from our team in terms of responsiveness in our systems. If they wanted any change we changed for them - such as if they wanted any additional functionality or so. The situation with SAP is different now - they are going to accept what the standard offering provides - that's a cultural issue. Where they had an expectation - previously - for substitute - that satisfaction would not satisfy any more. That's a cultural issue - they got to change the way of thinking.

11. Why does it take long time to manage a change?

Reply from KZ: (Laughter!) It is a matter of degree. In a large project like this we got a couple of change issues. We got change issues within the project itself - the team members - the step they have to go through. A lot of them were not in the project this size before. I have got experience of the project of this size either. Although similar steps apply - it's a matter of degree - lot of people to manage. There are different opinions. In terms of the change to Slab & Plate - the fact that we are changing job numbers... The fact that
different incumbent moving - we had a change in senior management in SPPD. They are all problems of change - we have to convince all the senior managers now that what they have inherited on the benefits of the previous people. So they have to take those on board too. Some of them are non-existing... In fact, if you recognise that there are numbers of cycles in change number of phases - the first phase in a process of change might be rejection - 'right wings'- we are still at that stage. The phase might be - questioning - the next phase might be inquiry of benefits - the next phase might be acceptance by the change. So certainly one got to recognise that there is a need to handle change on the project. That's why Steve Senders on the project. Making sure that training is done properly. Make sure that people are communicated effectively. John Bown strength in communicating with senior management is quite strong - that's important. It's a long project.

12. What roles do you think IT will play after the implementation of Phoenix 21? Do you see any strategic business implication for IT as a result of the implementation of Phoenix 21?

Reply from KZ: In response to the first question - IT after the implementation, I see, they could provide a SAP technical support function largely that will be a continuation of what we call technical support group. There is a need for lower level technical supports - to assume the data bases - keep on eyes on the performance of the system - make sure that there is no bottleneck. Transactions are... response time is OK... back up has been taken... archiving has been done... unnecessary data has been cleaned up - all sorts of these issues. Also, within the technical support as far as IT is concerned there will be an on-going need to develop additional functionality - writing ABAP programs, changing screens - all sorts of functions that you would not necessarily give it to users. IT wishes to control those. The Configuration Management of the System to make sure that everything is documented properly. That we are in a good position to operate in future.

Complementing that will be an organisation within SPPD called - system administration group - they can be responsible for security access, log on - also responsible for total management - functionality - update data - on going system support - training support - et cetera. Any request for changes will be co-ordinated through that group - SAP technical support group.

Strategic business implication for IT... We got on SAP. We already made an organisational change in that regard. IT already appointed a manager consulting services basically it's a corporate function now. The idea there is to maximise the effectiveness of the service that IT can provide in steel areas of the business. There are marketing opportunities as well. Growth opportunities -SAP is growing quite rapidly - we see a business opportunity there... we want to be in it.

13. What are the possibilities that you would achieve the delivered milestones that have been set out for the implementation of Phoenix 21?

Reply from KZ: Well, the major milestone obviously is the implementation of budget this year and subsequent implementation of ... At this point of time, I have no reason why these milestones cannot be achieved. I think we in spite of difficulties getting consultancies specially on SAP's 5.0c version - like a documentation handicaps a long way... System was
not installed until after X-mas - it affecting us. All the trades were underestimated - in every courses people attended they identified new courses. Those followed on. We have a quite similar difficulty largely the functional design... the prototype exercises look like going to be successful - the indication is that the project going to go OK.

14. Are you happy with the current structure of the project?

Reply from KZ: I have got some concern. I think structures are OK. I think if you set up any structure - providing you got right people - they are going to make it work. I am little bit concerned in some areas... Some of the capabilities of people have not been utilised fully... we got a problem really. To date we had consultants working on requirements' definitions and functional design assisting SPPD... be on the team to produce those documents - also currently working on the prototype. Really, what we need to do now is separate a little bit... quite a significant number of programs to be written that has been identified in the functional designs. Then there is data conversions and interfaces. So, IT people who had been involved in they got the knowledge of the applications. They need to become the analysts of the programmers. There is even being a debate within teams that perhaps SPPD people should involve some of the programming. We need now to focus on and dividing up the work in terms of whose best skill to do the right job. SPPD people should now onward should concentrate on change management issues really. IT people should go on setting up the system. Anyway it's their system.

15. Do you have anything unique that you have experienced during the development of the Phoenix 21 project?

Reply from KZ: My experience in developing the system... certainly the uniqueness is that the indulgence of the consultants... high contribution by the customers... previously, most of the time, scope of works was difficult to be identified (in case of the in-house development)... now we are much closer to the users.

The change management is going to be a real challenge now. I am not saying that ready acceptance by Slab and Plate. As I said before, some of the incumbents are causing some concerns. Another critical success factor for success of the project is the commitment by senior management - that's got to be there.

Maintenance people - they got concerns about the package itself providing the functionality - they perceive they need more than what SAP can offer. I don't think there is a full acceptance to SAP solution in the Maintenance area.

I thanked Mr Zoszak. The interview continued for an hour.

Informal Interview with Mr Brian Harvey (Team Leader Supply - Phoenix 21 Project) on 7 June 1993 at 9-30 am: Venue - Phoenix 21 Office, Worrawong Conference Centre, BHP - SPPD, Port Kembla.

[This interview is tape recorded]

1. When did you join BHP-SPPD?
Reply from BH: March 1980. I worked in an engineering company before. I worked with 'Lisart' for seven years. I left Lisart, and then joined in heavy engineering company, then to BHP-SPPD. I was a fitter turner. Basically my background is engineering... become a quality assurance manager in heavy engineering area. Then, came here with that sort of background into the Supply department. I brought some new life into BHP... majority of people in supply area never been exposed to .. I used work in engineering company in UK as well.

2. When did you become involved with the Phoenix 21 project?

Reply from BH: Time flows on so quickly. It was about eighteen months ago I involved in it from my supply background not from Phoenix point of view. I was running on a system controller. I own the current supply system that's my current responsibility. Finance people talking about interfacing Phoenix to the supply system - it was then ... after that I join into the Phoenix 21 in July (when the project has been re-structured) last year as a full time member of the project.

3. What major area were you involved in with the project?

Reply from BH: I basically look after all the inventory management, cataloguing, purchasing, management business requirements, management reporting, actual implementation and training the people in supply system. That's a very big area - lot of people involved.

4. Could you please indicate some major historical events in regard to the computerisation within Supply department and its functional interrelationships with other departments of SPPD?

Reply from BH: Just roughly I joined the company in 1980. At the time, they were running a CVC system. It was a very primitive system. When I joined the company I realised that it was a major problem. So we then designed a new system called EPR system that was in around 1983/1984. It was totally standalone purchasing system only had interface with engineering drawing system. It was not interfaced with any other such as cash or accounts payable system. At that stage, we had about eighty people using that system. Then the purchasing department joined the engineering procurement department in 1987. This purchasing and engineering procurement department then came together as a Supply department in 1987. So the purchasing area had a very primitive PC based purchasing systems - based on simple software. It was not cost effective. So we then said, Ok, that we would revise everything we did because the purchasing type of operation was not suitable to go in to the EPR system. The EPR system was an Engineering Purchasing System. What then we had to do to come up with a new system called OLMS (On-Line Management and Supply) system. We interface that with our inventory and cataloguing. That is the current system, ie, OLMS system. Now we got about twelve hundred users of our system. All requisitions and all requests for goods or whatever may be can manage by Supply.

One big impact we had in early 80s was our problem of communications with our suppliers. From about 1984 we start looking at EDI. We set in conjuncture with the university of Wollongong and SPERY and NEIS (National Electronic Information

S C Lodh: Phd Student, Department of Accountancy, The University of Wollongong. These interview documents are strictly confidential and provided for examination purposes of this thesis only.
Service)... we set that in 1984 and 1985. It was no financial gain to BHP. It was a mean to getting EDI working. So we did a lot of very primitive EDI work.

Among 65% to 80% of all of our orders go over EDI to over hundred suppliers. We got about forty thousand suppliers. But, only one hundred is using EDI. So what you have that this one hundred can get very quick feedback through EDI. We have actually reduced forty thousand to seven hundred now. That would probably come down even further. So, EDI what made us to do is to focus our supplier customer relationship - get more supply agreement through EDI. So they have the better idea what will be next year... the modification of contract... We set this network by ourselves because nobody was available then. Our BHP-IT was interested and specified how to do it. What will happen now is that our BHP-IT now have their own gateway that was direct result of setting up this. EDI was a major development... integration of stocks within the plant... also on-line requisitioning within the plant. Anybody in the plant can say I want this. Before, they used to sent paper requisitions to us. Then we had a tremendous reduction of stock. EDI saved our considerable amount of stock and millions of dollars. Really over holding now is immerncy stock and insurance stock... very little... fast turnover thing... safety clothing... things like that. They are all 24 hour delivery. We used to have millions of dollars worth of stock. We have place call general stores where you keep all the consumable we don't now bother for that..

EDI used for external supplier. That was the biggest event to supply system. Now we are going for fully integrated package. That's a next step. Now we are integrating Finance, Maintenance, Engineering and all others.

I think those are the major changes.

5. What major strategic focuses instigate the Phoenix 21 project?

Reply from BH: The basic focus of the Phoenix 21 is to have a fully integrated system that will long last. One of the biggest problems we always had is reconciliation of the general ledger to our stock. With SAP it will be one system that would happen since it would be one system. Certainly, integration is a bonus from the system. The other major thing I think is that it's a system which has been developed for twenty-three years. By now all the bugs should be overcome, where we have lots of bugs in our OEMS system. Hopefully SAP system can overcome those.

6. In what respects do you think SAP system is powerful?

Reply from BH: The reporting system - the drill down ability. It's not so much of SAP the fact is that it's an integrated system. So, somebody in Supply can look at the cost aspects and somebody in Finance can look at supply issues. The facts that you are using same data whether it's a relational or something else we are using one central data base.

7. Could you please specify the uses of EDI (Electronic Data Interchange) mechanism in SPPD? Can SAP system be compatible in maintaining your existing EDI transactions?

Reply from BH: SAP cannot. We are writing and developing our EDI. It will be interfaced to SAP. They have their own software but it's not sufficient for what we want. It is very primitive. All of existing transactions and more will be interfaced to SAP. We have things
8. To successfully implement your IBS what important critical aspects would you consider most?

Reply from BH: The main problems are the lack of understanding SAP. How do you fit SAP design to your business - that's a critical thing. Everybody can give you a car and say drive it. Let's say if you got a 'Mazrati' you drive differently. We still find out which car we got. In some areas we got, you know, a very poor system. We probably are loosing fifty percent of the functionality in Supply. We have to got to try that functionality back up by looking SAP. Saying hai look what we want basically, you know, understanding the concept of SAP. What SAP does is that they sell a product that doesn't tell you how to use it. [Question posed: Is SAP a flexible system?] For example, this week what we found is that we have a trouble understanding how to use it. That a vendor putting stock to our plant... then our people using the stock... then the vendor will replenishing the stock... there is a way to do this in SAP. We found there is even better way we can do that by using what we talking about are... you know... One of the important issue is that how do you use SAP.

[Question posed: In Supply area what type of 'plant' code, ie, would it be from RM system or RK-S system?] We will be using from RM system.

9. Have you seen any political struggle including interpersonal and organisational conflicts amongst various members of the project or functional owners or others? If so, what are the major reasons for such conflicts?

Reply from BH: Oh.. yeah... many... many... One of the main reasons has been the lack of understanding of SAP. Why SAP is putting to the company? What are the benefits from it? All of a sudden getting into the project functional owners did not want to know... I was lucky I got one functional owner Mr Karl Rommel. He understands that. He recognises the importance... making effort to make it work. But the Maintenance guys do not want to do a lot with it. Now I believe he will turn over and say hai hank on this can help me! Because, you know, this is a total integrated package. There are lots of conflicts between Finance people because it was their project to start with and then it got stopped. There were lots of problems in that area. The actual problem of integration between the teams, I don't believe, is a problem. I believe this softwares now enable us say hai Maintenance you rely on supply and you Supply relies on Finance, which is a normal business transaction, you know. But the philosophy in the past in BHP put walls up against each functions. That's what some of the problems coming from the previous way of operating... But now and within two or three years time we all will understand the fact that the Maintenance people directly Fax Supply which directly effects Finance and effect profit and loss.

[Question posed: Do you think this sort of 'them and us' conflicts may arise in terms of table and information control, ie, who can see and control it?] I don't think it is going to be a problem. Because we all using... they can say that that's fine... say Finance says - you are not going to see my profit and loss statement... that's fine. We will understand that. We redo it. We will change that profit and loss. Whereas in the past we really did not understand what is going on over there. They chose us not to see the financial applications. We believe what commitment we make for the company. In the past it was very difficult to identify
what could be the commitments have been. Previously it took long time to get the information before we even decide any contracts. In future it will be immediate.

I think you will find that lot of personal problems as well. Frustration of project going from Finance to total integrated package. [Question posed: Do you think 'letting the bird out of the cage return for who' or is it the other way round that some people thought from the Finance and Planning that they are the one who initially kicked the project and now going out of their hands!] It would never get back to them! It is not Finance's job is to control finances only. If I put budget for five millions then it's my job manage the five million. Finance should give the tools to manage that, which we have not had in the past. Only what we had is I had my budget I had no mechanism to collect that five million. Six months down the track Finance can say hai you spent seven million that's not good to me. So, I see that they let the car out of the bag but it got to be the benefit of the company. It may not be to the benefit to the individual. They lose their power but if you look at it sensibly they have really given the opportunity to the managers of the plant to manage their day to day operations. I don't see that be a problem.

10. To you, what is a cultural issue?

Reply from BH: A cultural issue to me is whereby we always have this problem between Finance and Supply. They always encounter Supply and Supply encounters Finance. Now what we are never realised is that both of us really manage the profit and loss statement - that's really a cultural issue. Brining SAP help us to understand that.

11. Why does it take long time to manage a change?

Reply from BH: It has been because of cultural problems. Because the Finance used to say we are looking at finance package. Our Newcastle [R&BD] has gone ahead putting SAP. We are going ahead putting SAP. What we should have done putting SAP at equivalent level which other company has done. So, we will end up with problem in three or four year's times to integrate with group level - that's a major change to us. We should have equipped first then say R&BD, New Zealand Steel, etc. We looked at Slab & Plate [SPPD] got the cultural walls there... [when the group level's integration would come - don't you think you have to start again especially for setting hierarchy - things like that?] That's a cultural thing to BHP that we don't always get the correct systems from the top.

To me one reason it takes so long that we have not had strong leadership. To me, somebody up there should have said hai I want an integrated business system for my division... It's cultural thing what takes a long time here.

12. What major roles do you think will Supply department play in future under the proposed system implementation?

Reply from BH: It would be difficult to know whether there will be Supply department in the next month - a major re-arrangement underway. In Supply function we will always have inventory function and purchasing function... So, to me, those functions will always be there. What SAP will enable us to do is to standardise the procedures throughout the plant. So, you can have decentralised Supply rather than a centralised Supply. I think one of the major things is to control inventory... We will have far better contract management in the system... We will stop people going outside the system.
13. What roles do you think IT will play after the implementation of Phoenix 21? Do you see any strategic business implication for IT as a result of the implementation of Phoenix 21?

Reply from BH: Well, IT is a licensed implementors of SAP, right. So, they will have the on-going system maintenance role of SAP. The major role they will play to look at good response time of the system - adequate hardware implementations and so on.

[Question posed: After the implementations of Phoenix 21, do you think IT can manage to get work as they used to get from SPPD?] They will not get any work. Just few people will become a part of the system administration group. They all would not be even from IT. This is all together a separate system - nothing to do with IT. I see, IT is being involved purely under contract. I think the project will have major impact on IT, absolutely. I mean, there will not be any more writing application programme for in-house systems except SAP system's involvements. Application side - nothing - will be dead.

14. What major roles do you think will accountants play in the future under the proposed system implementation?

Reply from BH: You mean the Finance people. [Accountant is not seen as separate function rather finance and planning is] I believe finance people will be able to manage the division. In the past, I don't think they manage the division. I really... they have never known whether they have got correct data. You could never trust the figures given by finance.

15. What are the possibilities that you would achieve the delivered milestones that have been set out for the implementation of Phoenix 21?

Reply from BH: We will be going live on 1 June 1994. I don't see that would be a problem.

16. Are you happy with the current structure of the project?

Reply from BH: I believe, it is very difficult to structure a project like this nature. I am quite happy with this structure compare to the other ex-project structure. Where we were totally undermined whereas in this project we got right people, right timing, and we are able to retain them, that's different from other projects. So, I am quite happy with this structure.

17. Do you have anything unique that you have experienced during the development of the Phoenix 21 project?

Reply from BH: I think what is unique is that all the disciplines in BHP-SPPD talk to each other. That's one of the unique thing to me - breaking down the barriers. There are internal barriers broken within the team as well... not saying that there is no problem but this is a first project we have the whole business functions working together and that's unique. There had never been another project like that [at SPPD in data processing and information system area]. Brian has given me some background information and diagrams which represent Supply function.

I thanked Mr Brian. The interview continued for an hour.
Appendix 4
Appendix 4
Field Diaries

We (my supervisor and I) had been trying to gain access into a large organisation for more than a year where re-structuring or a change process was underway. My supervisor had obtained information that a major change process was underway at a local steel manufacturing company (ie, BHP's Slab and Plate Products Division - BHP-SPPD). Eventually, we were granted an appointment on Friday 7 March 1992. Unfortunately it was cancelled. We did not abandon hope. On 12 February 1992, Professor G (my supervisor) asked me, "Where is your dress - ie suit plus tie!". We then headed off at 2-00 pm from the university to meet a senior executive officer (SEO) (Mr Geoff Shaw - hereinafter GS) at the commercial building premises of the researched organisation.

First Appointment 12 February 1992: Wednesday

Our first appointment was on 12 February 1992. After introductions, GS handed over two 'draft' copies of strategic highlights on the 'Phoenix 21 Project - Stage I". These draft copies were labelled as "World Class Cost Management Strategy for the 90s". He then explained the strategic features of the SPPD's cost management systems and their on-going Phoenix 21 project (also known as SAP project). After explaining some strategic issues of the project for about an hour, the SEO asked us what could he do for us. "What sort of things are you looking for?"

In reply, I recall saying "I am trying to do some research on the area of management accounting and control systems". I also mentioned some other tentative areas to be investigated. For example, I uttered 'what about EDP cost accounting', 'what about ABC analysis'. I remember talking about the data capture mechanism for ABC analysis. All these were basically suggested to show my confidence that I had some real intention to do research and that I was familiar with contemporary cost management issues. However, GS asked me whether I wanted to be involved with their on-going Phoenix 21 project. If so, he could arrange for that. My supervisor, Professor G, supported me by saying: "Aren't you looking for this?" From my methodological training I could easily recognise why he was insistent that I do this project. It is mainly to apprehend the idea that in conducting any investigation on contemporary change processes there is a need for a process oriented involvement. GS arranged for a future appointment. That is, GS asked me to give him a call on Monday 17 February 1992 for further talks. We left the office of GS at 4-00 pm.

17 February 1992: Monday

I called GS on the telephone three times. Finally, I got through to him. I spoke to him for about ten minutes and made an appointment to see him on the following day at 9-30 am.

18 February 1992: Tuesday

I reached the commercial building premises of the researched organisation (ie, BHP-SPPD) at 9-30 am. I met GS at the entrance of the building. He was carrying a couple of books and talking to an official. I showed my gratitude to him for seeing me and waited for a few minutes and then, we went upstairs to his office. I found him a pleasant person to talk to.

As a matter of fact, the books he was carrying he had acquired them for me. He gave the books to me. He then started explaining how they had come through to the latest stage of the project. They had carried out a costing system review for SPPD during the period July
to October 1989 by a joint team effort of SPPD and PA Consulting Group, Australia. The result of the review was one of them. It was the first book which he suggested I read. According to GS, it was the initial work which was a starting point for their ongoing current project. The Book was entitled "BHP Steel: SPPD Port Kembla Steelworks: Costing Systems Review: Draft".

The second book he suggested I read is titled "Visit to United States of America and United Kingdom: 21 May to 1 June 1990", Volume 1 [Commercial-In Confidence] - by R. Miller [Manager Finance and Control, SPPD], G. Shaw [Senior Accountant Financial Analysis, SPPD], and G. Goeldner [Account Manager Systems, BHP IT]. The book contains reports on the cost management systems of ten different companies that they visited in the USA and UK.

The third book GS suggested I read was the "System Evaluation Report" prepared by the Costing System Review Team. It was an evaluation report concerning the replacement proposal for the SAP system (an integrated Software Application Package of SAP AG International Ltd) over their old DISC (Direct Integrated standard costing) system.

The fourth document (loose copies - not bound for my reference) he suggested I look at was the project structure dated 19 August 1991. It summarised the scope and responsibilities of the project team and functions. At the time, the structure of the project was established, initially by forming different teams with an aim to prototype respective functionality of the SAP system.

The fifth book he gave me and suggested I read was "Appendix - Book One". This book contains the following - (1) Statement of Requirements for SPPD's Accounting Systems, (2) SAP Written Response to Requirements, and (3) Report On SAP Presentation.

The final book he suggested I read is the SAP's "RF system: Function Description". It is a book published by SAP (International) AG, which prescribes data management systems, applications and products on Financial Accounting, Accounts Receivable, Accounts Payable, General Ledger Accounts and Cash Management systems design.

GS then asked me how much time I could spend there. I replied, I could spend about 20 to 28 hours a week. The time I specified to him was Monday to Wednesday from 8-30 am to 5-00 pm and Thursday from 8-30 to 3-00 pm. I kept one day free for my university work - attending seminars and teaching tutorials. He said "that's OK, that's plenty of time". He then asked me, "How are you going to spend this time?". I replied, though hesitantly, "some of the time I will spend reading the documents, using the library and working with the project team". In fact, I could not specify exactly how I could spend this time that I specified. GS was quiet for some time. Then he said, "if you just read the documents and our various reports I think you would not be able to understand the processes fully, rather I suggest you get involved with the project". "Now, go through these books then give me a call when you finish." I came back to the university at 12-00 am.

20 February 1992: Thursday

Though I could not go through all the books, I had a quick look at them. I decided to call GS. I rang his Commercial Building office, but could not get through to him. An office secretary replied he might be in his Warrawong IT office, and gave me a telephone number

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to try. I phoned but was told that he was attending a meeting. I requested the attendant, 'to tell GS to give me a call if he possibly could'.

21 February 1992: Friday

In the morning I called GS in his Commercial Building office, but I could not get through to him. Again, I requested an office secretary to tell him to give me a call. At around 10 am, GS called me back. We had a discussion about 20 minutes regarding different issues of the books that he gave me to read. Though fragmented, I recall most of the issues GS discussed: 'how to implement the project', 'how to manage the project', 'what are the possible sources of the project funding', etc. "We need good people", said GS. He emphasised that "technological factors (ie, computer technology) are very important". He further commented, "we don't have much differentiation between financial and management accounting as some academics do, though we do understand the issue. We are trying to install an integrated system, which can facilitate achieving all the requirements - financial, operational and strategic requirements at SPPD". We also discussed other issues including the project implementation, monitoring, structuring, and design issues. In fact, though I did not have much experience at the time regarding their ongoing project, I put forward a couple of penetrating suggestions such as - "you know, what you are doing now is mostly 'functional integration', isn't it? 'What about social integration'?" Immediately GS replied, "yes, cultural issues are very important. You see, this is the reason why many people think I am not in my office most of the time". I made an appointment to see him on Monday 24 February at 2-00 pm.

24 February 1992: Monday

At 2-00 pm I went to the Commercial Building. GS was not in his office at the time. An office secretary requested me to wait. It was about half an hour later GS arrived. As usual we exchanged pleasantries to each other. He asked me whether I had read the materials that he suggested I read. I replied, "yes, I had a quick look at those". He then asked me whether I had any question. I said, "not really, at this stage I don't have any". Then, GS took another set of books. These are Appendices (ie, the details of different prototype works) bound and labelled as Book-Two, Book-Three, and Book-Four. He also took some folders. One of them is BBM (Buy Build Methodology). It is a manual which explains a plausible methodology that is needed to be considered in replacing and installing a data-base Mainframe system. It describes various steps of project management. GS suggested I could read it on the premises but I was not allowed to take it outside, for reasons of trade secrets. He also asked me whether I was interested in reading the ProSAP manual. It is a project management manual of SAP AG International (the company whose software modules they (SPPD-BHP) want to buy and install to develop their integrated cost management system). GS also suggested I read the Appendix Book-Two and the ProSAP manual and insisted I get involved with the project. He mentioned that the problem is how to implement a project of that size. He then said that "there are lots of problems and also different solutions". For example, "SAP might not be user friendly but if we want we could overcome this problem as well", said GS.

For some time GS remained silent. I initiated talking by saying "what about the change

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management issues?" For example, I said, "there is a need to divide organisational aspects into two extremes in the sense of 'visible' and 'invisible'. What I had tried to let him know if I could document these aspects the way in which some accounting researchers (such as Laughlin 1991) advanced the organisational change models. I gave the article of Laughlin (1991) to him. He said that he would read paper. For the next appointment he asked that I give him a call when I was ready. GS then requested me to put the manual (ie, BBM) back into his drawer after I'd finished reading. He left the room. I had a quick look at it and put it back into his drawer. I left his office at 4-45 pm.

26 February 1992: Wednesday

In the morning I called GS in the Commercial Building office. He was not there. I could not get through to him. I left message to an office secretary to request GS to give me a telephone call. I did not receive any call from GS on the day.

27 February 1992: Thursday

At around 10-00 am I called GS. An office secretary replied he was not in his commercial building office at the time. The secretary asked me whether she would transfer the phone through to their Warrawong IT office. I got through to the Warrawong IT office. I was told that he was at a meeting at the time. I left a message to give me a call when GS back to his office.

At around 12-00 am, an office secretary from the Warrawong IT office (where the Phoenix 21 office is located) called me and said that GS was very busy today and asked to apologise for not responding to you, however, the secretary further added that he had scheduled an appointment for me to see him on Monday 2 March 1992 at 2-00 pm at his Commercial Building office.

2 March 1992: Monday

I reached the commercial building at 2-25 pm. I met GS at the reception. I showed my gratitude and waited for a minute. We then walked up to his office. I asked him, "how are you today?" Then, I uttered, "It's a very warm day. Isn't it?". GS had a round table in his office. He used that for meeting with people. I initiated the conversation with a request for some further documents and references, which I found useful from the reading of the books and documents that I had taken from GS. These were (1) Appendices of Costing Systems Review - Vol. I to VI, (2) Appendices to Visit to USA & UK - Vol. I & Vol. II.

I asked for a permission to GS whether I could use photocopy facilities. GS replied, "yes, you can do that". Then, I said, "you know, I think to some extent I have started to understand the aim of your project". I then contended, "you know, as a matter of fact, the texts that have been prepared by your CSR (costing systems review) team really vindicate a very good benchmark for SPPD's cost management systems. I then enquired of whether they had given any special attention to balancing or reconciling these guide-lines with the project implementation strategies. GS replied, "we need to give attention to this, which is yet to be looked at. I certainly consider this is an important issue." I then asked GS, "Have you had a chance to look at Laughlin's paper?" He replied, "it is an interesting paper". He suggested I read the following two articles - (1) "Designing and Implementing a New Cost Management System" by John A. Miller published in the journal of Cost Management.
Winter, 1992, pp 41-53, (2) "How Lockheed Implemented CIM" by C. Kenneth Howery, Earl D. Bennet, and Sarah Reed, published in Management Accounting, December 1991, pp 22-28. He emphasised that I first read the Miller article and said, "it's a good paper". In addition, I enquired about the communication processes amongst the project team and the scope of the project at the time.

I pointed out by saying "you know, I think I should get involved in the project". GS responded, "How are you going to do that?". I replied, "for example, I will start by attending some meetings and by communicating the team work". GS reminded me, "you can't attend all the meetings because sometimes meetings may be held at some overlapping time with another". He further mentioned, "that's not a problem. Most of the meetings are well documented. If you want to know something about any meeting you can go through the minutes of the meetings". He asserted, "you are not allowed to intervene in our team work". Then I responded by saying, "may I start with a functional group, especially with the Project Manager Accounting & Integration (RF-GL/RKS/RKA - see Project structure for abbreviation) who has three sub-teams under him - General Ledger (RF-GL), Costing (RKS) and Job Costing (RKA) teams. I then said, "What if I start with the costing team?" I also said that my involvement would be part time. GS commented, "yes, that is possible. That's fine, I will give you a ring on Monday about this arrangement".

He then got up and stood beside his huge cabinet files. On the cabinet files he had several folders of various works. I also stood up. I uttered, "Oh, oh, right, it's really a lot of work!"

Finally, I asked him whether he could provide some materials on the organisation structure of BHP-SPPD. He took a piece of paper and started drawing a figure in order to explain the structure of SPPD. He told me he would provide some materials on the structure at a later date. I left the office at 3-45 pm. I came back to the university.

9 March 1992: Monday

I was expecting a call from GS. He might have been very busy (at the time), otherwise I would have received a call.

10 March 1992: Tuesday

At 9-15 am, I called GS but I could not get through to him. I left a message requesting to give me a call if GS possibly could. At around 10-30 am he called me back. "Hi Sudhir, how are you today. I am sorry I could not get back to you earlier", said GS. He told me he had made some arrangements for me to work with Mr David Prior (DP) who at the time was working with the costing side of the project. He suggested I contact Mr Prior during the week. He then asked me whether I would be willing to go for a "SAP" training, which would be held in Sydney from 16 to 21 March 1992. A reason why GS suggested I do the training was that Mr DP was going for SAP training in the following week. He mentioned, "if I could go with him it might be helpful to understand the technical part of the SAP system". Of course, there was costs involved for attending the training courses, which as mentioned by GS was about A$1,600.00 per week excluding lodging and food. He suggested that the cost of training would be free-of-charge for me as SAP AG Australia Ltd was happy to offer it. The costs for accommodation and food would be reimbursed by BHP-SPPD. I replied, "that's fine with me. It's a great opportunity". However, he also kept

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a provision in that if he could not arrange the training at that time, I could still go to the
next training programme which would be held in June 1992. He also asked me to talk to Mr
Prior and said, "let's see what David is suggesting".

He asked me to collect two appendices from his office any time on the following day that I
asked for. Finally, he said, "first get in touch with David, and second, for strategic issues, if
you have any queries you are welcome to see me". [End of the telephone conversation with
GS].

In the afternoon I called DP on telephone, but I could not get through to him. The attendant
of the telephone gave me another number, which was a direct number for DP. I called, the
reply was that he was not there at the time. I left a message requesting to give me a call.

It was about an hour later DP called me back and said "hi Sudhir, I got your message. Geoff
told me about you". I asked him when I could see him. We also discussed going to Sydney
for the SAP training in the following week. He told me that he was going to discuss the
issue with Geoff and then he would get back to me. However, he had given me an
appointment to meet him if I fail to go to Sydney in the following week, ie, on 23 March at
the Warrawong IT office.

11 March 1992: Wednesday

At around 9-30 am I went to the Commercial Building to pick up the books that were left
by GS at his office. At the time he was not in his office. I asked an office secretary whether
I could pick up the books that GS left for me on his desk. I took the books and left an
article for him on his desk entitled: "Management Reporting: In the New Manufacturing
Environment" by Robert A Howell and Stephen R Soucy published in Management
Accounting/February 1988, pp 22-29. I wrote a note on a post-it paper, "Have you seen
this article, regards, Sudhir". Here again my intention was to "keep-in-touch" with him, that
is to create a further reference for future interaction.

After picking up the books I came back to the university.

I was anxious, DP did not call me back. He was supposed to inform me whether I should
accompany him for SAP training in Sydney. At about 11-00 am I called him. That time DP
himself picked up the telephone and said "hi Sudhir, I have spoken to Geoff about your
going to SAP training. We think this training might not be appropriate for you at this time.
Rather, we suggest you to go to the next one which will be held in June 1992. However,
please do come on 23 March 1992 at my Warrawong IT office. I usually go to the office 8-
45 am. When you arrive give me a call from the reception I will come along to receive you.
Bye now." [End of the conversation].

23 March 1992: Monday

At around 9-00 am I reached BHP's IT Warrawong office at King Street. At the reception
DP left a message that he had left to attend a conference meeting at the SPPD's Warrawong
Conference centre and asked me join him. Accordingly, I went to the conference centre
where the meeting had already started. It was a review session on the "RK-S Cost Centre
Hierarchy - Functional Design - Phase 1". There were seven participants attending the
session. They were:

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Mr Geoff Shaw (GS)
Ms Gabriella Serray
(hereinafter Ms GS)
Mr Peter Newing (hereinafter PN)
Mr Bill Martinoski (hereinafter BM)
Mr Ian McCulloch (hereinafter IM)
Mr Steve Bond (hereinafter SB)
Mr David Prior (DP)

Finance & Planning BHP-SPP
Project Co-ordinator
Finance & Planning BHP-SPPD Project
Manager Accounting & Integration (RF - GL/RKS/RKA)
BHP-IT Wollongong Region
Finance & Planning BHP-SPPD
Finance & Planning BHP-SPPD
Finance & Planning BHP-SPPD
Finance & Planning BHP-SPPD

I took notes as a quiet observer. Basically, what I had tried to do was to grasp what they were discussing, I did not intervene their on-going discussion. The session continued till lunch at 1-00 pm.

Lunch was provided. The afternoon session continued on the same topic till 2-30 pm. It was suggested that the paper for cost centre hierarchy would be reviewed on the following day's morning session.

A project team meeting was held at 2-30 pm. All members attended the meeting. GS (Project Co-ordinator - also known as Project Manager) gave a short speech and introduced some new members of the project team including myself. Then, several issues were discussed (see notes - for my own reference).

At 3-00 pm, Mr Powe Mellor (hereinafter PM) presented a seminar on change management (see notes for the issues being discussed - for my reference). The seminar continued till 4-45 pm. After this presentation the review session for the day was called off. I came back to the university. There would be a review session held on both the RK-S cost centre hierarchy and RK-A job costing papers on the following day.

24 March 1992: Tuesday

I reached the Warrawong Conference Centre at 8-55 am. The review session started at 9-00 am. The participants of the session were the same as the previous day except Richard from SAP AG International Ltd. Till lunch the discussion was centred on the RK-S Cost Centre Hierarchy paper. At 11-15 am, GS went out to do some other work and came back at around 2-15 pm.

When GS returned a new session started on the RK-S Budgeting - functional design paper. All the afternoon sessions had been spent reviewing the budgeting paper. At the time, I had not received any copies of these papers. I looked forward to collecting them. On the day I also sat as a silent observer and took notes on the discussions. During the tea and lunch break I attempted to ask questions to the participants of the sessions on certain "technologies" to enhance my understanding and clarification for issues which I was unaware of or did not know at the time. I left the centre a bit earlier (at around 4-00 pm).

25 March 1992: Wednesday

The review sessions of the day started at 9-00 am. All the day was spent reviewing the RK-S budgeting - functional design paper. I attended all the sessions of the day. During a

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discussion session I asked an intervening question on the topic of cost component split and variance analysis. I found that they did not like my intervention at that stage, though the issue was important to me. A participant (DP) told me, "we have a different meaning for these". IM told me, "I will explain it to you later". I left the Warrawong Conference Centre at 5-00 pm.

26 March 1992: Thursday

I arrived at the Warrawong Conference Centre at 9-05 am. The morning session started at 9-00 am, aimed at reviewing the RK-S budgeting paper. The participants of the session were GS, Ms GS, BM, PN, SB, DP, IM, Mr S. Reed-Stephenson (hereinafter SRS). I took notes (see notes - for my reference). The session continued till lunch.

After lunch a review session was held on the RK-A Job Costing - Functional Design paper. The participants were GS, PN, Ms GS, BM, Mr Peter McKellar (hereinafter PM - from Maintenance Services - BHP-SPPD), SRS, Mr Vince Laina (VL), Mr Phil Sebbens (PS-Engineering BHP-SPPD). All the afternoon sessions had been spent reviewing the RK-A Job costing - functional design paper. I took notes (see notes- for my reference). Generally, I attempted to ask questions of some participants of the review session during the tea or lunch break. I left the centre at 4-00 pm.

27 March 1992: Friday

I reached the Warrawong Conference centre at 9-00 am. The morning session was started at 9-00 am, with an aim to review the Job Costing - functional design paper. The participants were same as the previous day's afternoon session, namely, GS, Ms GS, PN, VL, PM, BM, SRS. I attended the session as a quiet participant. Different aspects of the functional design issues of the Job costing area were discussed (see also Job Costing paper by PN/VL/PS - for my reference). I came back to the university at 3-00 pm.

30 March 1992: Monday

I reached the Warrawong Conference Centre at 9-00 am. The day's review session was begun with the RF-G/L - functional design paper. The participants of the session were GS, Ms GS, Ms Pia Hawkins (hereinafter PH), Mr Henry Fernandaz (hereinafter HF), Ms Alison Cacciola (hereinafter AC), BM, Mr. Creig Walker (hereinafter CW - from Melbourne IT). The discussions were centred on the requirements' definitions of general ledger system and its corresponding SAP functionality (see notes- for my reference). The review session of the following day would be started at 11-00 am.

During the tea break I talked to CW. He suggested, "careful about the terminology as it is used in the SAP system environment as compared to the terminology that exists in the management accounting literature!" In addition, we discussed some issues of the EPP cost accounting practice at BHP IT.

31 March 1992: Tuesday

I reached the Warrawong Conference Centre at 11-00 am. The day's review session began with the paper on RF-S General Ledger - functional Design. The participants were GS, PN, Ms GS, HF, PH, BM, CW. Several issues such as external interfaces, SAP functionality and integration issues were discussed and reviewed (see notes and RF-S General Ledger
I reached the centre at 9-00 am. The day's review session began with the RK-S Actual - Functional Design paper. The participants were GS, Ms GS, PN, IM, SB, and DP. After a briefing about the task of the different groups, that is the tasks that each individual team member were supposed to be carried out in the following week, GS (project Co-ordinator) was called on to begin the review session. I took notes (see notes- for my reference). I left Warrawong Conference centre at 6-00 pm. It was a long day for me. I came back to the university.

2 April 1992: Thursday

There was no review session held on the day. I went to the Warrawong IT office, where the office of the Phoenix 21 was located at the time. Since I had been assigned to work with PP for initial contacts. I directly went to him. At the time I found most of the time DP was engaged with other members. This allowed me to use his desk for a short time. DP told me, "if you want you can read the materials on the desk and book-shelf". I took a couple of folders from the shelf and went through them.

While reading these folders I became aware of many new terminologies. I started interrogating the members of the project whenever possible for clarifications of issues which I did not know or could not understood at the time. That day I asked a question to IM whose desk was in the same room where my desk was located. I asked him, "what is a cost centre to you?". In response, he provided me a copy of the recent glossary of terms prepared by the staffs of SPPP (see file for the paper - for my reference). Besides reading, I also had chats with other personnel, namely with SB and BM. I left the office at 4-00 pm and came back to the university.

3 April 1992: Friday

I went to the Warrawong IT office at 9-00 am. I did not attend any conference or review sessions on the day. I read several documents and also collected some functional design papers, which had been reviewed during the last few weeks.

I had a chat with Richard of SAP International Ltd about the concept of "Moving Average" used in the RM-MAT system and its implications for the analysis of variances and process costing (see notes- for my references). I asked a question to SB, 'what can be the distinction between "direct cost" and "direct cost centre"?'. He replied that they had a different meaning for these. He provided me a copy of the minute of a small group activity meeting which was held on 3 May 1991. I left the Phoenix 21's office at 3-00 pm.

6 April 1992: Monday

I reached the Phoenix-21 office, Warrawong IT, at 9-00 am. I read a manual of SAP's RK-S cost centre accounting, which I took from DP's desk. I read a portion of it up until lunch time. After the lunch break, a pre-view meeting was held to prepare executive summaries on various functional design papers which were reviewed during the last few weeks. These papers were supposed to be presented before the steering committee. I attended the meeting. It was a group discussion meeting by 4 people. They were IM, BM, SB, DP. I
took notes. I left the office at 5-30 pm and came back to the university.

7 April 1992: Tuesday

I went to the Warrawong IT centre, Phoenix 21 office, at 9-00 am. The project manager arranged a separate desk for me. I read some documents on the SPPD's Capital Costing Systems [CCS] (it was excluded from Phoenix 21 Stage I at the time). I had a discussion with Mr Peter Newings who is from BHP-IT about some issues of RK-A Job costing (see notes - for my reference). I read the paper on RK-A Job Costing functional design till 2-50 pm. At 3-00 pm, I attended a project team meeting. The meeting was held at the Warrawong IT centre, Conference Room no 1. The meeting continued for an hour. I took notes (see notes- for my reference). I came back to the university at 4.00 pm.

8 April 1992: Wednesday

I reached the Warrawong Conference Centre at 9-00 am. There were several presentations exhibited by the different functional design review groups to the managers. The first presentation was held on the RK-S Cost Centre hierarchy functional design paper, presented by SB. The participants were GS, Mr R. Winbank (hereinafter RW), DP, Ms A Shain (hereinafter AS), IM, DM, Mr K. Zoszak (hereinafter KZ), VL, BM, SB, Ms K Reid (hereinafter KR1) and Mr R Fiels (from SAP). The presentation continued for an hour. After the presentation some time were allotted to raise questions and issues. I took notes.

The second presentation was held on the functional design - RK-S budgeting - executive summary paper, presented by DP (Finance and Planning). The presentation started at 11-00 am. Similar to the previous presentations some times were allotted to raise questions and issues. I took notes (see notes- for my reference). In completion of this presentation a lunch break was called for half an hour.

During the lunch break I talked to Mr Ronald Fiels, of SAP, from Austria. He was a consultant from SAP AG International Ltd. He was a well-trained consultant. He knew the tactic how to place questions and stimulate the discussion. He was considered a very knowledgable person on SAP products. He asked me, "what is my research project?" I told him some of my research thrusts relating to the investigation in Phoenix 21 project. At the end of our conversation, he said to me, "why not, try! I wish you good luck with your research project."

After the lunch break a new presentation session was held on the functional design of RK-S Actuals paper, presented by DP. Similarly, there was question time. I took notes.

The presentation sessions were called off at 3-30 pm. There would be presentations on the RK-A Job Costing - Executive Summary, and RF - G/L functional design on the following day. I looked forward to attending the presentations. I came back to the university at 4-00 pm.

9 April 1992: Thursday

I reached the BHP-SPPD's Warrawong Conference Centre at 9-00 am. The participants of the morning review session were GS, PN, BM, VL, AS, DM, PS, KZ, RW, SRS, and Mr Ronald Fiels from SAP AG Ltd. PN had presented a paper on RK-A Job Costing - functional design which continued till 10-45 am. Then a tea break was called.

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At 11-00 am the session started again with an invitation for questions on the job costing area. Different functionality and validation issues were raised and debated. This session continued till the lunch break. I took notes (see notes- for my reference).

After lunch a new session was started at 1-00 pm. It was a presentation session on RF - GL - Functional Design, presented by HF. The participants were GS, BM, PN, VL, HF, DM, KS, KR1, Ms AS, and Mr Ronald Fiels. This presentation continued till 3-00 pm. I took notes. I came back to the university at 3-30 pm.

13 April 1992: Monday

At 9-00 am, I directly went to the Warrawong IT Phoenix 21 office. I did not attend any meeting or presentation on the day. First, I met DP, whom I had initially been assigned to work with. I asked DP whether I could read the files on his desk and those which were on the book-shelves. He said, "that's fine". Moreover, I asked whether he had any SAP's manual on the RK-A job costing or process costing area. He replied, "let me ask Steve (SB)". He found one with SB. Accordingly, I collected process costing system documentation of SAP's modules.

I spent the day reading the SAP's Process Costing manual. Sometimes I asked questions of various project members (namely, DP, BM, SB and IM). At the time these individuals' desks were in the same office cube where I used to sit.

On the day, I discovered that there would be a presentation meeting to the steering committee. All the functional design review papers would be presented before all the interested parties as well as the interessement device. It would be an important meeting. I decided to attend the meeting. It would begin at 8-30 am.

14 April 1992: Tuesday

I reached the Warrawong Conference Centre at 8-30 am. The steering committee presentations were held in conference room no 13. The participants were Ms GS, GS (project co-ordinator & project manager), Mr Jim Hall (hereinafter JH - steering committee), Mr Doug Snowden (hereinafter DW - steering committee), DM, Mr Peter Wren (hereinafter PW - steering committee), KR1, Mr Gerry Platt (hereinafter GP - steering committee), Mr Navelle Moony (hereinafter NM - steering committee), Mr G Amstrong (hereinafter GA), DP, PN, BM, IM, SB, Mr J Kilkelly (hereinafter JK), Mr Chris Cooper (hereinafter CC - steering committee), Mr John Mann (hereinafter JM - Steering committee) and KZ.

The first presentation was held on the functional design of the RK-S Cost Centre Hierarchy paper, presented by Mr S. Bond (SB). This presentation including question time continued till 10-00 am. I took notes (see notes - for my reference).

At 10-15 am, DP presented a paper on the functional design of the RK-S Budgeting system. Various issues were raised and debated. I took notes. After the tea break, at 11-25 am, DP presented another paper on the RK-S Budgeting. Various issues were raised and debated. I took notes. After this presentation, the morning session was called off for lunch.

The afternoon session began at 12-40 pm. The session started with the presentation of the

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paper on RK-S Job Order Costing, presented by PN. All the steering committee members attended this session. Some new members also participated in the session such as VL, SRS and PS. This presentation, including question time, continued till 2-30 pm. I took notes. During the break I met some of the steering committee members such as CC, JH and GP.

At 2-30 pm, the RF-S G/L functional design executive summary paper was presented by Henry Fernandaz. Some new participants also came in. They were PH and AC. All the presentations were completed at 3-45 pm. Then, a steering committee meeting was supposed to be held in the same setting. Due to my commitments at university I could not attend this steering committee meeting. On the other hand, it was also important for me to seek permission from GS whether I would be allowed to attend the steering committee meeting. I came back to the university at 4-10 pm.

On 22 April there would be presentations on 'stocks and interfaces'.

15 April 1992: Wednesday

A pre-steering committee presentation meeting was held on the day. All the team managers attended the meeting.

I reached the Warrawong Conference centre at 8-55 am. The presentation session was started at 9-00 am. The first presentation was held on RM- Materials, presented by Ms Kerry Raid. The participants were GS (project co-ordinator), Ms GS, VL, BM, KZ, JK, GA. This presentation continued including question time till 11-00 am. I took notes.

There was a tea-break for 15 minutes. After the tea-break VL and AS presented the functional design executive summary paper on labour costing. I took notes. There was no lunch served on the day. (Usually when any review session is held at the conference centre they provide lunch.). As a result the reviewer decided to stay back and finish the rest of the papers. The paper on Job numbers were presented by VL and AS. I took notes. At 1-30 pm, the review sessions of the day was called off. I came back to the university.

The following Thursday would be a roster day at BHP. Friday would be a 'good Friday'. Monday would be a public holiday. It would be a long weekend for SPPD's employees.

22 April 1992: Wednesday

There was a steering committee presentation held at the Warrawong Conference Centre. All the functional design papers on the RM - Materials (stock), the Labour Costing, the Job Numbers, the Interfaces and Technical support Interfaces would be presented before the steering committee. I reached the BHP-SPPD's Warrawong Conference Centre at 8-30 am. The first presentation was held on RM - Materials, presented by Ms K Reid. The participants of the session were Ms GS, GS, JH, CC, GP, DM, NM, KZ, BM, DP, JK, GA, KR1, JM, DS, Mr J Anus (hereinafter JA) and Mr Karl Rommel (hereinafter KR2). The presentation the functional design paper on RM-Materials, including question time, continued till 10-00 am. I took notes.

At 10-00 am, VL and AS presented the functional design paper on labour costing. The participants were the same as in the previous session except the labour costing team. This presentation continued till 11-00 am. I took notes.

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At 11-00 am, they (VL and AS) presented another paper on job numbers. This presentation continued for an hour. Then, the session was called off for lunch. During the lunch time I had a chat with Mr N Mooney (NM) of BHP-IT Wollongong Region. We talked about "cultural changes" and some aspects of the SAP system. He is a computer technical person. From the discussion I realised that he was referring to the consideration of 'new technology', emphasising that SAP is not an old technology.

At 12-15 pm, AS presented the paper on Interfaces. The interfaces issues is an important consideration for integrating various sub-systems, which can be related to a cultural change issue at SPPD. I took notes.

At 1-30 pm, RW presented a paper on the design of 'Technical Support & Interfaces'. Various technical support strategies were raised and debated during this session.

The presentation sessions were called off at 3-00 pm. I left the conference room & came back to the university.

23 April 1992: Thursday

I went to the Phoenix 21’s office located in BHP IT Warrawong office at 9-00 am. I collected a few names of the individuals who are in the steering committee. I had a chat with DP about some functionality of SAP’s cost accounting systems. I read a manual on SAP’s RK-S cost accounting system. I took notes (see notes - for my reference). I also had a chat with Mr Henry Fernandaz who had prepared the functional design paper on RF - G/L (Financial accounting). Financial accounting was one of the major driving forces to develop the CMS at SPPD. At the time I tried to understand how the general ledger (G/L) system works with cost centre accounting (CCA) and job order accounting.

An interesting aspect of sitting and reading in the office of the project development team is that one can hear and observe the sort of debates and discussions in which the project members are engaged. Whenever I used to go to the office of Phoenix-21 I was watchful to follow their discussions. There were several groups conversations I could often hear, such as Cost Centre Hierarchy group, RK-S Budgeting group, RM - Materials groups, RF - G/L group and Production Planning group. The major tasks of all these teams at that stage were to prototype various convincing technical choices in order to develop, build and implement the system. At the time, the activities of the members included raising and discussing issues, evaluating the SAP functionality as well as evaluating and developing business processes. Sometimes I took notes while they were discussing. For example, while IM and JA were talking about some functional and conceptual aspects of production process flow, I took a note in that they were passing comments by saying "links are always unknown". I understood them in that difficulties of understanding a complete picture of a project like this is not an easy task, at least from an individual point of view. Rather, it is socially constructed and it can only be possible to make sense of the process if one considers all these prototypical efforts as "constitutive" processes. It is only through the interaction of various groups of people could produce and translate a meaningful social action.

I came back to the university at 4-00 pm.

27 April 1992: Monday

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I went to the Phoenix 21 at 9-30 am. I found some uneasiness among some members of the team. I could not work out why it was so. However, I heard that there would be a team meeting at 3-00 pm, which would be held at the Warrawong Conference Centre, Room No 14.

During the morning I tried to find some new materials to read. I realised that in order to understand these complex processes of change there is a need for understanding some history of the past events that SPPD and the project team went through. A broad thrust of historical investigations of any kind is towards the searching out synonymous, or pseudonymous trends, alongside the unravelling thread of which the current activities of the social group fitfully march (my thought at the time). On the other hand, almost in every meeting the discussion and debate among the members of the project including consultants are often conducted in a language as specialised as that of medicine or linguistic philosophy.

At 3-00 pm I went to the Warrawong Conference Centre to attend a team meeting. The participants of the meeting were DP, GA, JA, VL, PN, BM, SRS, PS, IM, JK, GS, AC, SB, AS, KR1, PH, KZ, JH and three others.

First, Mr J Hall (JH) stressed several critical aspects of the project. Then he announced a change in the existing project's organisation structure. The new project structure was proposed by dividing the project team into two groups, that is, project management technical and project management implementation groups. JH then mentioned that he would be the head of these two teams and the sponsor of the project. Names of the two team managers' were also announced. They were KZ and GS, where KZ would be the project manager - build/design/develop team and GS was assigned to be the implementation manager. Two team leaders' names were also announced, namely, KR1 and BM. I found people were hesitant to ask questions except a few. That is, those who were dissatisfied with this structural change or those who were curious in a sense of 'who will be what' was raised questions. I realised that something might have happened in the steering committee meeting after the functional design presentations. However I took notes on the issues that were debated and discussed (see notes - for my reference).

I came back to the university at 4-30 pm.

28 April 1992: Tuesday

At 9-00 am I went to the Phoenix 21 office. During the morning I had chats with some team members about some SAP functionality.

At 1-00 pm I attended a team meeting held at the conference room no 1, Warrawong IT, King Street, Building 1. In this meeting an announcement was made by KZ about the details of the project structure and the names of different group members and leaders. I found some members were disappointed with this structural change. But there were no formal resistance. GS also gave a speech on the future tasks of the implementation team, that is, who to do what, etc (see notes - for my reference). I had a feeling at that stage that they were going to implement the SAP project and it was getting stronger.

After the meeting I came back to my desk and read some documents. I came back to the university at 4-00 pm.

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29 April 1992: Wednesday


At 2-00 pm I attended a group meeting chaired by Ms Amanda Shain (AS - group leader Interface and Feeder System team). Other participants were: PM, PN, PH, BP, Mr M. Rouse (hereinafter MR), and KJ. All the members were non-accountants. Several technical issues were discussed and debated. The topics included: the design of the feeder system both automatic and manual, user acceptance, validation, prior validation and accountants' role, RM-INST, work order, job numbers, human error, reconciliation between cost centres and job order and cultural issues. I took notes.

I found some uneasiness and dissatisfactions among some of the team members. It was because of the splitting of team members into two groups. It appeared to me that those who were assigned with technical design/build/test of SAP system or technical support group were quite happy. The disquiet was seemed to me with those who had been assigned to the implementation group. It might be that the 'technical' (that is, knowledge about the machines) is considered to be valuable to individuals who wanted to gain more operational knowledge. These individuals see if they could get more operational knowledge, they can earn more "social value", prestige, and gain more future opportunities including earning more money, promotion and other valances. I left the Phoenix office at 4-45 pm and came back to the university.

30 April 1992. Thursday

I reached the BHP-SPPD's Phoenix 21 Office at King Street, Warrawong IT, at 8-45 am. At 9-00 am I attended a meeting of the Implementation Team held at Building 2, conference room no 2. The meeting was chaired by GS. After restructuring the project it was the first meeting by the implementation group. The participants of the meeting were GS, IM, PS, SRS, Mr D Kirton (hereinafter DK), AC, VL, DM, SB, BM, Mr R Kelly (hereinafter RK - Project support) and an unknown (to me). Several issues including changing role of the team, change management issues, budgeting processes & coordinating, scope of the team, need analysis, cost office restructuring, cost centre types, fixed and variable costs' splits were discussed and debated in the meeting. The meeting closed at 10-15 am. I came back to my desk and read some documents.

I had chats with some project members. As a matter of fact whenever I had a chance I used to ask question to the project members on different issues. Sometimes I used to gossip. I found making jokes or use of some other "body languages" are most powerful tools of informal communication. In this regard I could not cope with them as I came of a different cultural background.

A member stressed by pointing out, "we should not develop an inferiority complex between two groups (technical vs implementation group)". At the time it seemed to me that the implementation group had less power after the split and were trying to re-gain their roles.

I came back to the university at 4-00 pm.

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4 May 1992: Monday

I reached the Phoenix 21 office located in the building 1 of BHP's Warrawong IT office at 9-45 am. I showed my gratitude to some of the team members. Two project members (namely, SRS and PS) were shifted to the room where I used to sit. They arranged a new desk for me. I asked PS whether he had any manual on SAP's RK-A job order costing. He replied that he had all of them. He attended all the SAP's RK-A training courses. At the time, he was involved with the functional design - job order costing. I took two folders from him. One of them was a manual on RK-A Job Order Accounting, Vol. 1, K04.2/5, released 01/01/1988 and the other contained some copies of the transparencies that were given as hand out during the SAP training courses. I read these till 2-30 pm.

At 2-30 pm, I attended a group meeting. It was a meeting for outlining tasks between the implementation group and project accounting integration group. The participants were: from the implementation group - BM, SB, PS and IM, and from the project accounting integration group - KR1 and DP. I took notes on the discussion. The meeting ended at 3-15 pm. I came back to my desk and read a SAP's system manual for an hour. I photocopied an article entitled: Designing and implementing a new cost management system by John A. Miller and passed it to three members of the implementation group.

I came back to the university at 5-00 pm.

5 May 1992: Tuesday

I arrived at the Phoenix office at 9-30 am. As usual I showed my gratitude to some team members. I took a manual on RK-A Job Order Accounting from PS and read a few chapters from it. I took notes on some SAP system functionality.

At 10-00 am I attended a "project management meeting". The participants of the meeting were KZ (project manager), KR1 (leader Accounting integration), RW (leader interface technical), AS (a leader interface team).

KZ introduced the meeting with the argument that "in this meeting I just want to talk about our next agenda and outstanding issues". I took notes on the discussion (see notes - for my reference). The meeting continued till 11-30 am.

After the meeting I came back to my desk and read the rest of the SAP's Job Order Costing manual till 3-00 pm. At the time, SRS was preparing to go to a meeting. I asked him, 'what is this meeting for'? He told that it was a meeting to prototype issues such as how to conduct shop floor investigation in order to identify activities, cost centre hierarchy, etc. I went with him and attended the meeting. The participants of the meeting were SRS, DP, IM, PS and SB. At the time this group was assigned the tasks of identifying cost centre, activities within cost centres, cost elements, fixed and variable splits. The meeting began at 3-15 pm and closed at 4-00 pm. In this meeting a standard questionnaire was prepared in order to conduct investigations on the above issues (see the enclosed questionnaire with notes of the day - for my reference).

In fact, there had been many overlapping meetings within the Phoenix project teams. At the time, the number had been increased tremendously. Each group had a certain task to perform. I could choose only a few these meetings.

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From reading minutes and attending meetings I used to gather new source of information for further interaction. When I had nothing to do I used to interact with team members for further information. Sometimes I used to gossip. It worked for me. Through such interactions I used to get some new source of readings or information about the meetings.

In the afternoon, IM asked me whether I would like to go with him to the plant areas for collecting information about cost centres and activities. I replied, "that's fine. I am very much interested to do this." Identification of "activities" is an important concern for developing good cost management system. From the following week I decided to go with him to the plant areas. Of course, I would also be attending the project team meetings.

6 May 1992: Wednesday
I arrived at the Warrawong IT Office at 9-30 am. Till 10-30 am I read some booklets and manuals and then I attended a project team meeting. The meeting was held in conference room no 1, Warrawong IT office. The participants of the meeting were KZ (new project manager - development and build team), KR1, AS, RW, HF, VL, DP, GA, PN, Mr D Rouse (hereinafter DR), Mr Scott Barden (hereinafter SB2), KJ, PM, MR and ML. It was a meeting for evaluating individual level progresses, raising issues, scheduling the following work breakdown structure and enhancing communication among team members. The meeting ended at 11-30 am. I took notes.

I read a manual for an hour. At 1-00 pm, I had a chat with DM. We discussed about some issues of establishing cost centres and different process flows within the plant areas. We also discussed the issue of how to identify the standard determinants in the steel making area. He gave me a copy of the draft paper on the conceptual design - cost centre structure of the Steel Making and said, "you may find this a useful document, which explains various 'standard determinants' that we have already identified" (see loose file - for my own reference). All the afternoon I read this document. I asked a couple of questions to Mr Ian McCulloch (IM) to clarify some terminologies used in it.

I left the Phoenix office at 4-30 pm.

7 May 1992: Thursday
I reached the Phoenix 21's office at about 8-45 am. I attended a meeting of the project implementation team at 9-00 am, which was held at the conference room no 2, Building 1 - Warrawong IT office. The participants were GS, IM, BM, DK, AC, PS, DM, SRS and RT. In this meeting, there was a short presentation on the "need analysis" delivered by Mr Dowe Miller. (See a handout on change management plan - for my reference). I took notes.

I came back to my desk and read some materials. I had some discussion with SRS about the cost centre accounting and job order costing. From PS I collected three pocket books of BHP, which explains a historical background of some of the BHP's executives. I had a chat with PH (Ms Pia Hawkins) who was originally appointed as a programmer. At the time she was working as a system analyst. I read a manual on the SPPD's DISC system. Good night, it was then 9-45 pm. I went home. Relax Sudhir!

I gathered an information about a meeting which was to be held on the following Monday at the Commercial Building. The meeting was organised to introduce the SAP system to

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various management accountants of plant areas. The venue for which would be conference room no 1 - would be held at 3-00 pm. I looked forward to attend the meeting.

11 May 1992: Monday

I went to the Phoenix 21 office at 9-05 am. I was supposed to go to the plant area with IM. He left at 9-00 am. I was late. However, I took a SAP system's manual on the RK-A order settlements from the book-shelf of PS. I read it for about an hour and then went to collect some materials from DM (group leader - change management). I talked to him for about twenty minutes and collected some transparencies that he had used in a presentation during the previous week.

I went to the office of KZ (project manager - build/design/test team). I asked him whether I could see the minutes of various meetings. He gave me all the minutes without any hesitation. I also asked him whether I could photocopy them. He replied "that's fine with me. I have no objection". I photocopied some of them. I came back to my desk and read these minutes for an hour.

Meanwhile IM came back from the plant area. I went to him. I apologised for arriving late. I asked him whether I could go with him in the afternoon. We went together to the BOS Slab Caster Mill at 1-00 pm. He had an appointment with Mr G Farrar (hereinafter GF), management accountant to the BOS Slab Caster. I was introduced to GF.

IM provided a background information of the SAP system and its implementation requirements including how to identify cost centres, activities and cost drivers to GF. I took notes while they were having conversations. I found it was very useful technique to understand other's manipulations as they themselves were trying to prototype their own needs. It's an opportunity to take notes while they were in the practical business of identifying the essentials (or translating their own requirements). IM was supposed to go to the BOS Mill again for identifying activities, cost drivers, etc. I proposed accompanying him as well.

IM then went to the Plate Mill for making an appointment. I went with him. He made an appointment with an official of the Plate Mill which would be held on the following morning. I decided to go with him.

He then drove me to the Commercial Building where I attended a meeting held at the conference room no 1. It was a meeting with some of the 'key users' of the proposed system, especially with the management accountants of the various plants and cost offices.

The participants of the meeting were GS, DM, RT, GF, BM, Peter Cortis (Management Accountant - Engineering services), Wayne Mannisto (Mgt. Acct.- Tin mill Products), Esa Mannisto (Cost Accountant), Mark Williams (Management Accountant - Slab, Plate & Strip Division), Doug Snowden (mgt. Accountant - Iron making), Peter Rojes (Mgmt. Acct. - Service Operation), Paul Vassallo (Sr. Accountant - Management Reporting), Ivan Figor (Financial Accountant) and Peter Constable (Accountant Plate Mill).

I took notes. The meeting closed at 4-30 pm. I came back to the university.

12 May 1992: Tuesday

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I reached to the Warrawong IT office at 8-45 am. IM had an appointment to meet Mr Renato Compagnin (hereinafter RC), who was a management accountant to the Hot Strip mill. At 9-00 am we went to the Hot Strip Mill. In that meeting, initially, IM introduced some of the SAP system requirements to RC. He then explained three phases how to collect and identify cost centres, activities, cost elements and who to charge to (chargeout issues). I took notes while they were discussing. It was my first visit to the Hot Strip Mill. The discussion ended at 10-00 am.

We then went to the Slab Yard department. IM had a similar meeting with Mr Ian Cook (hereinafter IC) of the Slab Yard. The processes of the cost centres and the possible "activities" of different processes were explored and discussed. I took notes. It appeared to me that IC was satisfied hearing the news of the SAP system implementation at SPPD, though he did not know much about it at the time.

We came back to the Phoenix 21 office at 12-00 am. After lunch I read some papers and then came back to the university.

13 May 1992: Wednesday

I went to the Phoenix Office at 11-30 am. IM gave me a manual on the RK-System: Descriptions of Functions. All the afternoon I went through it. I came back to the university at 4-00 pm.

14 May 1992: Thursday

I went to the Phoenix 21 office at 8-45 am. At 9-00 am, I attended a project Implementation Team meeting held in the conference room no 2 - Building 1, King street, Warrawong BHP-IT. The participants of the meeting were GS, VL, DK, BM, SRS, DM, RT, PS, SB and AC. I took notes. The meeting ended at 10-30 am.

After the meeting I came back to my desk and read some materials. I had chats with some team members. At 1-00 pm, I went with PS to the engineering construction department. PS had an appointment with Mr Russel Ansety (Superintendent of construction services - BHP-SPPD) and Mr P Wren (hereinafter PW) from the Engineering Business Management Department. The meeting was organised to enhance understanding the SAP functionality (inscriptions) and to identify various types of cost centre, activities and charge out issues for the engineering department. PS initiated the discussion with an introduction about some features of the SAP system. They then re-visited the categories of the existing cost centre types and "activities". I could not follow the way in which they defined "activities" of that cost centre, where most of the costs are deemed to be fixed. A reason of this is that their philosophy of distributing fixed cost is yet to be understood clearly. I think they were mixing two issues together - that is, variable activity base with the commitment of maximum peak period's fixed cost. It has a serious implication on the design of CMS at SPPD as it can distort information. I left the issue unclarified. During their discussion I took notes (see notes - for my reference). I also had a chat with Mr Ansety on the issue.

We left the engineering department at 4-00 pm and came back to Warrawong IT. I came back to the university at 4-25 pm.

18 May 1992: Monday

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I went to the Warrawong IT at 8-40 am. At 8-50 am, I went with IM to the Plate Mill where he had an appointment with Mr Peter Constable (hereinafter PC - management accountant of the Plate Mill). After having a cup of coffee, IM (he was an ex-management accountant to the Plate Mill) initiated the discussion by introducing the RK-S cost centre accounting module to PC. IM asserted that the RK-S system of SAP was basically an 'activity based cost accounting' system. He then revisited the existing cost centre categories by drawing a diagram on a white-board. He understood that department very well, because he used to work for that department. I tried to grasp some of the processes and activities of that department. I took notes while they were discussing. We came back to Warrawong IT office at 12-00 am. After the lunch break I read some SAP system's manuals.

I came back to the university at 5-00 pm.

19 May 1992: Tuesday

I reached the Warrawong IT centre at King Street at 9-00 am. I met GS and confirmed with him about my going for the SAP training to Sydney which would be held in the following month (ie, June 1992).

I collected some minutes of the previous management meetings from KZ. I had chats with a few project members (namely, RT, PS, SRS and BM). I read a manual on SAP's RK-System description. I took notes (see notes - for my reference).

I attended a team meeting. The meeting aimed at to prototype how to identify cost centres and activities. I took notes on the discussion. I left the phoenix office at 4-00 pm.

20 May 1992: Wednesday

I went to the Warrawong IT centre at 12-00 am. I went with IM to the BOS Slab Caster and the Steel Making Mills. IM met with GF (management accountant - BOS). They discussed several issues regarding the processes and activities that the BOS Slab caster and Steel making departments perform. I took notes. The meeting called off at 2-55 pm. We then came back to the phoenix 21 office.

At 3-30 pm I attended a meeting which aimed at to prototype various business events and processes, especially for general ledger (G/L financial accounting). The attendants of the meeting were KR1 (manager accounting integration group) and HF. Several aspects of the financial accounting area were raised and discussed. I took notes (see notes - for my reference). I came back to the university at 5-00 pm.

21 May 1992: Thursday

I reached the Phoenix 21 office at 8-50 am. At 9-00 am I attended a meeting which was run by the Implementation team. The attendants of the meeting were GS, VL, DK, IM, SB, SRS, PS, RT and AC.

The meeting was introduced by GS. After the introduction, GS discussed several issues including some aspects of the project steering committee.

At the time there had been tension concerning lack of communication between the top decision making authority (eg, steering committee) with the individual project team member. It was like two triangle concepts of communication between two management...
groups. It was only the middle level managers could communicate to either sides.

GS asked each individual concerning their individual progress, that is, what they were doing at the time. Also asked whether the members had been facing any problems. Not only was the objectives for such a meeting to evaluate individual progress of the members, but also enhance greater awareness among the group members of what other members were doing at the time.

GS (the implementation manager) also mentioned that there would be a steering committee meeting at the commercial building at 1-30 pm on the same day. I asked him whether I could attend that meeting. He replied "I prefer rather not, sorry!" However, he asked his secretary (AC) to provide me a copy of the paper in which several agendas of the meeting were mentioned and would be discussed in the meeting.

On the day I also collected a draft paper on BARS (BHP Accounting and Reporting Systems) version 1.0 - 3/10/91 - prepared by Mr Henry Farnendaz (HF), Ms Alison Greenway (AG) and Ms Pia Hawkins (PH). Furthermore, I collected some conceptual design papers (see conceptual design file - for my reference).

25 May 1992: Monday

I reached at the Warrawong IT centre at 10-15 am. I attended a group meeting held in conference room no 1 at Warrawong IT, Building 1. The participants of the meeting were BM, VL, RK, Ms L Lauri (hereinafter LL), IM, SB, AC and PS.

BM told the participants that Mr Jim Hall (JH) would be the project sponsor. However, BM mentioned that his (JH) contact would be limited with the project team. BM further stated that "Jim (JH) really apologised for what happened during the past weeks. Jim was going to contact all the team members and inform about the split of the groups". This was an important information to the project members.

The meeting ended at 11-00 am.

I came back to my desk. I read a manual on the DISC (Direct Integrated Standard Costing) system which was implemented in 1979 for SPPD's costing system. I collected a copy of the DISC system documentation manual. I left the Phoenix office at 4-00 pm.

26 May 1992: Tuesday

I arrived at 10-00 am to the Phoenix 21 Office. Till lunch time I read the DISC system documentation manual. At 1-30 pm I attended a meeting which was called as "Accountants Presentation Conference" held in Room no 1, Building 2, Warrawong IT. One of the major aim of this meeting was to inform the accountants at SPPD concerning the development of the project at the time and to provide an overview the way in which the SAP modules operate. That is, in this meeting an overview of scope of the Phoenix 21 project was addressed. I took notes (see notes- for my reference). Participants of the meeting were KR1, VL, Mr Peter Roger (hereinafter PR - management accountant of the Manufacturing Service Shops), PS, Mr Peter Corties (PC2 - management accountant of the Energy Services), Mr Esa Mannisto (hereinafter EM - cost accountant from cost office), Mr Doug Snowden (hereinafter DS - management accountant of the Iron Making Services), Mr Mark Williams (hereinafter MW - management accountant of the Slab, Plate & Strip Mill), Mr

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Ivan Figar (hereinafter IF - financial accountant), Mr Waynee Armour (hereinafter WA - financial accountant from the Tin Mill), Mr Garry Bull (hereinafter GB - management accountant from the Maintenance & Repairs), Ms Amanda Moran (hereinafter AM-accountant for the Project Evaluation and Plan) and Mr Rob Rich (hereinafter RR - Pay-roll Superintendent).

The meeting continued for about two hours. I cam back to the university at 4-00 pm.

27 May 1992: Wednesday

I reached the Warrawong IT centre at 9-15 am. I missed to attend the meeting of the general ledger(GL) and Costing team which was held in conference room no 3.

At 10-00 am, I attended a meeting of the development team, which was chaired by KZ held in conference room no 1 at Warrawong IT, building no 1. Other participants were AS, PN, KR1, PM, DM, MR, PH, VL, DP, DR, GA, JA, and BM.

KZ told the participants about the position of JH (the sponsor of the project at the time). It was an important news to the members of the project.

After the introduction by KZ, the rest of the time was spent on to evaluate the progress of each individual team member regarding what they achieved during the week and what would be their immediate following work plan (they called "work breakdown" structure). All the participating project members told their progress, that is, what they had been doing during the week and would be doing in the following week. I took notes. The meeting was called off at 11-15 am.

Till the lunch time, I read the DISC system documentation manual. At 1-30 pm I attended a presentation meeting organised by the implementation team for the users, especially for the accountants who were belongs to the production areas. It was a presentation session to introduce the SAP system to the users. BM (a leader - accounting implementation group) provided an introductory overview about the SAP system. SB provided an overview of how the cost centre accounting system operate under the SAP system environment and compared the SAP system with their existing DISC system. SB also demonstrated some of the potential benefits and weaknesses for both of them.

IM provided some insights about the activity costing procedures, handling the overhead allocation procedures, reporting procedures and process of calculating BDC (budgeted Direct Cost) that operate under the SAP system environment. He also provided a comparison between some aspects of the SAP system and their current DISC system. Also demonstrated some of the limitations of the SAP system if implemented at SPPD (see notes - for my reference). Finally, BM demonstrated some of the functionality (inscriptions) of the SAP system for actual cost posting, variance analyses and its reporting. He then presented a comparison between the SAP system and their current DISC system.

During the question time, a few questions were raised. A reason for this might be that people (as participants of the meeting) did not know about it (at that stage) and therefore they didn't want to made any comment.

The participants of the meeting were BM, PS, IM, SB, SRS, Ms Jenny Schroeder, Mr Richard Jusinski, Mr Ron Gosman, Mr Lorenzo Miller, Mr W Jones, Ms Joyce Carleja, Ms

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Janice Blackley, Ms Diana Stavise, Mr Rodney Brack. The meeting was closed at 3-30 pm. I came back to the university.

28 May 1992: Thursday

I reached the Warrawong IT Centre at 8-50 am. At 9-00 am, I attended a meeting of the project implementation team. The participants of the meeting were GS, RT, RK, PS, SRS, AC, SB, DK, LL, IM, VL and BM.

As usual, the meeting was chaired by GS (the co-ordinator of the implementation group). Several issues were emphasised. The agendas that were raised and discussed was as follows - organising meeting with engineering people, chargeout rate (single or multiple), information about Jim Hall's (project sponsor) involvement, Phil Snowden's involvement (who would be the acting chairman of the steering committee), divisional strategy and SAP migration policy, in-house SAP training facilities and co-ordination between two teams. The meeting was called off at 9-45 am.

At 1-30 pm I attended a presentation meeting organised by the Implementation Group for the PVC (Planned value Control) and the budgeting people, which was held in the Commercial Building at conference room no 7.

Similar to the previous day's presentation with users from the production areas, BM provided an introductory overview of the SAP system. He also provided a benchmark comparison between the SAP system and the SPPD's current DISC system. He mentioned that SAP was not unique to SPPD only, other divisions were also purchasing it.

SB highlighted a prototype structure for establishment of the hierarchy of cost centres under the proposed implementation and compared them with the current cost centre hierarchy structure.

IM extended the discussion by introducing cost centre planning aspects under the SAP environment and compared them with their existing DISC system (see notes - for my reference).

During the question time several questions were raised, such as "you know, we have some 'grey' area such as direct vs overhead". It has been a long debated issue at SPPD. 'What is the purpose of cost centre hierarchy - both normal and alternative?', raised by a participant. 'Why do we need to increase the number of cost centres?' 'We need to consider the materiality aspects in regard to creating or re-structuring cost centres'.

The participants of the meeting were from the project team - BM, SB, IM, RT and from the Budget and the PVC departments - Mr Bill Cheyne, Ms Jenny Coburn, Mr Bob Williams, Mr H J Kah, Mr David Dipetro, Mr EO Covistock, Mr Tom Bryan, Mr Peter Geatley, Mr Denis Brown, Mr Steve Simpson.

The presentation session continued for two hours. After attending this session I came back to the university.

29 May 1992: Friday

I attended a presentation meeting organised by the Implementation team for the officials of the department of Accounts and Financial services which was held in the Commercial

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Building, conference room no 1.

A similar presentation was organised for production, PVC and Budget department officials on the previous day. BM introduced the SAP products and provided an overview of its applications. Further, he highlighted a comparison between SAP system and their DISC system (see notes - for my reference). SB presented a picture on some aspects of the cost centre hierarchy under the proposed SAP system and compared them with the DISC system. IM discussed about some of the characteristics of the cost centre planning including activity based costing and "drill down" facilities under the SAP system. He also provided some comparative picture with the DISC system and the limitations of their existing DISC system (see notes - for my reference).

During the question time, there was no question. A reason might be that the participants were from very lower levels of the organisation and did not want to intervene, or at the time, they might be confused about the teams, that is, who is the proper authority to lesson!

The participants of the presentation meeting were: Gary Edger, Vanessa Johnston, Ross Cradis, Robert Bemi, Coralie Carney, Shirley Frencham, Candie Hanna, Jacqui Crouch (PVC Dept), Sturt Wong, Mathew Savage, Julie Kirton, Derek Houling, Peter Gecolloch, Stacey Sainty, Fiavio Santalossa, Ian Taafi and from Phoenix 21 - BM, IM, AC, SB and PS.

After attending the presentation meeting, I came back to the university.

1 June 1992: Monday

I went to the Phoenix office at 11-15 am. Before lunch I read a portion of the book entitled as "Visit to United States of America & U.K. - 21 May to 1 June 1990", written by R. Miller, G. Shaw, and G. Goeldner. I also read a portion of a manual on the SPPD's existing DISC system, which I took from the book-shelf of Mr Steve Bond (a project team member). I took some notes.

After lunch I had chats with Mr Ian McCulloch and Mr S Reed-Stephenson. At 3-00 pm, I attended an implementation team meeting held in conference room no 2, building 1, Warrawong IT. The participants of the were BM, DK, PS, IM, and SB. It was a meeting aimed at to identify tasks through prototype and group discussions. Several issues were identified in the meeting for further investigations, such as:

1. Fixed and variable to what,
2. Develop definitions,
3. Preparation of discussion papers for enhancing benchmark understanding,
4. Mapping cost elements to activities and cost centre (compare new with old),
5. Degree of costs variability. Examples, R&M, Electricity expense,
6. Changing nature of fixed and variable from one process to another,
7. Development of mechanisms for approving cost centres hierarchy cost elements fixed and variable split,
8. List of cost elements and definitions;
9. List of centralised planning elements and how this will be budgeted for, and
10. Training for trainers and develop presentation skills.

After attending this meeting I came back to the university at 5-00 pm.

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2 June 1992: Tuesday

I went to the Phoenix office at 11-00 am. I had a talk with BM (a leader - Accounting implementation group). We discussed about the impact of the distribution of fixed and variable cost and measuring the activities of the support departments at SPPD. (see notes - for my reference)

At 1-00 pm, I attended a small group meeting held in conference room no 3. The participants of the meeting were KR1 (manager accounting integration - development team), PN (Development team member) and Mr Bill Wong (hereinafter BW - a member of the development team - maintenance area). The discussions were centred on the issues of budgeting in Maintenance Engineering area. The discussion topics were: the creation, planning and settling work orders, cost centres, maintenance organisation structure and the SAP inscriptions. The meeting ended at 2-45 pm. I took notes.

I came back to the university at 4-00 pm.

3 June 1992: Wednesday

I reached to the Phoenix office at 9-00 am. At 10-00 am, I attended a meeting of the project development team. The meeting was chaired by KZ. It was a meeting aimed at reviewing individual progress and enhancing further work breakdown structure. The participants were KZ, BW, PN, HF, VL, GA, PH, KJ, DR, KR1, MR, AS, JA and Mr Gerry Clancy (hereinafter GC).

After an apology for conference room availability, Kas Zoszak (KZ) asked each individual member to report their on-going work progress and the immediate work plan.

Conversations were as follows:

Initiated by JA: "I have been investigating product groupings in various mills - individual product requirement, BOS and Strip mill is progressing in this regards though caster has some problems."

Responded KZ "Keep your eyes on these issues."

JA responded "Enormous amounts of work need to be done."

"Make sure - its comprehensive", said KZ.

"What we need is a composition of product groupings. It is accounting plus technical type issue", said JA.

GA responded "I have been doing a review of business events... more details on by-product & looking at some further direction".

GC responded "I have been looking at the strategic issues on the area of job numbers, and cost centres in the supply areas. I am also looking at work breakdown structure of the interface team... I had a meeting with some people in the contract area... next week I will finalise the work breakdown scope on the interface area."

HF responded "I have been looking at the work breakdown structure on issues such
as chart of accounts' structure & its philosophy, reconciliation issues between the RF general ledger and process costing - ledger balancing, mapping cost centre reporting issues, finalising our own chart of accounts."

In between KR1 (manager accounting integration) interrupted with an argument: "For us volume is huge and therefore, we need to give some extra care". "Documents numbering is also a critical issue", said Ms Reid.

PH responded "I am trying to breakdown the resource structure... looking at skeleton feeder systems... 'have done first version of draft... 'have scheduled a meeting with the design team."

In between KZ interrupted with an argument that "design team will be very busy during the next three weeks or so".

VL responded "Last week I was looking at the requirement of cost elements. I looked at the Maintenance area for updating cost elements and budgeting purposes. The problem is... a wide range of user understanding regarding cost elements is necessary. I have also been looking at the provision of labour costing, that is - when labour costs will settle to order. Next week I will spend some time with R Fiels (a specialist SAP's consultant)."

BW responded "I was trying to understand the requirement of PME [Plant Maintenance Engineers] cost centres and how to prepare budgets, etc."

PN responded I spent lot of time with Peter McKellar and Bill Martinoski. Also worked on work breakdown structure, refined some business processes... will be doing HR review... hoping to make some diagram to show the relations of our business events.

In between Kas Zoszak provided an argument that "we should give more care on labour costing. We need to reconsider our extant labour costing system because it is a good one too".

KR1 responded "I have been maintaining liaison with SAP consultants and also with the project sponsor, Jim Hall. I have had a couple of meetings regarding our supply and contract systems... Following up various issues, getting ourselves ready to fight with SAP consultant". (Laughter!)

DR responded "I am involved with work breakdown structure... looking at the methodology of detailed system design. I talked to a few people from New Castle R&BD... looked at estimation technique, HR review... will be doing more work on the methodology of detail system design."

AS responded "I completed HR review... Have done a draft copy on work breakdown structure... prototyping different labour costing

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alternatives."

KZ responded "We will submit an informal presentation including costs estimation to the group general manager. It is hard to tell whether we are going for SAP... Costs may surprise us especially if we consider the interfaces... Reality is... costs of interfaces is about $2 million dollars - it is very high. At this cost, is it really worth while? What would be the cost/benefit of going SAP? At this stage, stopping the project is politically unacceptable! The issue is very complex. We have communication gaps with top management. On the other hand, we have not yet seen the total scope and, therefore, it is difficult to have cost estimate with 100% accuracy. Some are optimistic, some are pessimistic. Commitment from various departments to go for SAP is an issue. Who should sign it off... what about the documentation and refinement of business events... documenting the sequence of events and scheduling, that is - work breakdown structures. We should look forward to the flexibility issues. [Also emphasises] the visit of R Fiels from SAP"

Similarly others also mentioned what they had been doing during the previous week or so and what they would be doing in the following weeks. The meeting was called off at 11-15 am.

The rest of the day I spent in reading some documents and manuals. I had a some informal talk with a couple of the project members. Through informal interactions I used to attempt to collect information.

I came back to the university at 5-00 pm.

4 June 1992: Thursday

I reached the Phoenix 21 office at 8-50 am. At 9-00 am, I attended an implementation team meeting. The participants of the meeting were GS, IM, AC, LL, VL, SB, BM, SRS, PS and RT. As usual, the meeting was started with an introduction by GS. The discussions issues were centred on the following issues:

- Issues in engineering areas - selecting co-ordinators
- Computer system development strategy within SPPD
- Project development methodology
- Integrated business system approach (as opposed to the stand alone costing system approach)
- Production control issues
- SPPD's extant TQC approach and its compatibility with SAP system
- Multiple charge out rates
- Communication between two teams
- Training for In-house trainer - applied learning.
- Document control system and standard procedures and budgeting
- Identification of end users
- HR review - performance review

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The meeting was called off at 10-00 am.

Before lunch I read some articles and a SAP system documentation manual. At 2-00 pm, I attended a presentation meeting on the detail design issues held in conference room no 2 - building 1, Warrawong IT centre, Port-Kembla, the presenter was Mr David Rouse.

MR (Mr M Rouse) highlighted a strategic plan of the project (what they call high level plan) which detailed the strategic system design issues. Mr Kas Zoszak (KZ) asserted, "the implementation of budget data input using SAP system by Dec 1992 is quite unlikely". MR also demonstrated the overall plan of the project - especially the business processes and a time frame for the project completion.

Kas described, "Business processes has certain starts and ends - flow through some cycle - in other words - description of process flow between input and output". He insisted the implementation team with an argument that "you guys got to tell us some framework on office procedures. Design team is responsible for prioritising the SAP functionality and selecting the best alternatives." KZ further told that "do not over design the system, that's what SAP people are telling us. There are lots of standard SAP functionality which we don't know even. At this stage, nobody is looking at the management reporting side." For potential solution, Kas referred to apprehend Mr Ronald Fiels (a SAP consultant) suggestion. Mr Kas Zoszak also contended that two plans (ie, plans of the implementation team and the developmental team) should coincide.

Regarding description of user manual KZ commented that "it is next to useless". "We are not intending to build anything special at this stage in addition to the standard functionality of SAP. Of course, we will have limited function, limited drill down facility, we are trying to minimise costs", said Kas. KZ also mentioned that there would be some PC (personal computers) up load in regard to the production control issues. "Interfaces would be maintained with market plan and production plan only", said KZ

Forms design, a business process, was considered an important issue. Uniformity in use of standard forms was emphasised. Interfaces between various systems were considered one of the major bottlenecks and a cause of delaying the project at that stage. "Critical period of the project to me is to prototype various business processes", said Kas.

"Documentation standards" - whether it would be directed by IT or SPPD. (See notes for other details of this meeting - for my reference).

The meeting closed at 3-15 pm. I came back to the university at 4-00 pm.

9 June 1992. Tuesday
I reached the Phoenix 21 office at 8-45 pm. I attended a group meeting of the implementation team. Participants of the meeting were BM, SB, PS, SRS and DM. Various issues including manufacturing overheads, activities, cost elements and chargeout policies were raised and discussed. Several questions For example, what drives the level of costs?
What should be the basis of charging out costs to product level? How can the various cost elements be classified into fixed and variable? Who should be responsible for budgeting differing costs' elements? Whether it would be centralised or decentralised planning? How to deal with labour cost elements? How to deal with fortnightly staff costs as opposed to weekly wages? How to deal with fixed overtime allowance for certain departments?

A member stated that

"understanding the functionality of the SAP system may not be a problem. There are various alternative ways one can do things in a SAP environment. Rather, we got to decide which way to go. Based on what we decide it is the developmental team who can then customise or design the system functionality."

The team also discussed of how the budgeting for the independent activity costs could be done.

Though team could not achieve any immediate results, but they realised that a detail level of understanding of activities or standard determinants and assigning cost elements to activities by splitting costs into fixed and variable an emerging issue for implementing CMS in an integrated environment.

The meeting was called off at 12-10 pm.

After the lunch break, I had a chat with BM about the treatment of fixed costs in the SAP system. There are three different ways the fixed cost can be allocated in the SAP environment such as "Pre-distribution", "Assessment", and "Activity Based". BM responded, "we are not going to use pre-distribution. Planned value will be calculated for each activity. Actual fixed costs will be distributed on the basis of actual quantity used. Variance will be adjusted throughout."

I read a system description on the RK-S modules and make some notes (see notes - for my reference). In the afternoon I went to KZ (manager - developmental team). I asked KZ if they had any meeting coming up. Whenever I went to KZ's office I attempted to raise issues of the project. From the discussion with him, I recognised that KZ of the opinion that the project was not a straight forward one. There were numerous bugs in it. He sometime showed his worries, such as, "I don't know where this project is heading". It did not surprise me because good manager always have worries.

KZ mentioned, "you know the consideration of cost of implementing the system is very important". He stated,

we are cutting down some of the interfaces. Now, we are looking forward to implement the labour costing interfaces only. We have not yet consider buying the Supply system and Accounts Receivable and Payable modules from SAP. Certainly, limiting interfaces will limit our response time.

He further mentioned that "in terms of bottom level quality of data is not changing, but the aggregation of data facility will be enhanced. We have to consider management reporting side, that is, we need to consider the RK-E modules of SAP which deals with management reporting." KZ stated, "at this stage each individual is busy with their own work. We are busy with prototyping and getting hard copies of the system".
I came back to the university at 4-00 pm.

10 June 1992: Wednesday

I arrived at the Warrawong IT centre at 8-45 am. From 9-00 am to 5-00 pm I attended an introductory training course on SAP system presented by Mr Creig Walker from BHP's Melbourne IT office.

Issues covered and discussed:

- Introduction about SAP system.
- SAP system is a modular approach. The prime advantage of the SAP system is its high level integration facilities. SAP is an "Off-The-Shelf" software system and has the following advantages:
  * Flexibility - primarily comes from its table driven system,
  * Client indexing is used in order for consolidation purposes,
  * Company code & Business area - it can extend with 99 business areas, which can help in breaking down different levels of hierarchies - vertical and horizontal;
- Some system inscriptions were demonstrated on the following (see notes - for my reference):
  As long as you have authorisation you can see any transaction (screen to display).
  It is a real time system
  Moving around the system (four ways): menu driven - every user does not get the same menu - menu related to function.
  Transaction code - 4 character unique identifier.
  Dynamic menu - System administration people would use those;
  PF Keys - fast tracking to the system - in a typical mainframe 24 PF keys.
  Documentation:
    On-line documentation
    Minimal documentation - Make it easy, flexibility, etc.
    Four Levels of documentations:
    Application area - logical business function, ie, linking business transaction;
    Transaction documentation - what is the purpose of using a particular transaction? Why is it used for? Customisation of transactions.
    Dypro (Dynamic programming)
    Field Documentation - can be alphanumeric and numeric.
  System massages: Dialogue messages - "I" for information messages, "W" for warning, "E" for error messages, "F" for format, "A" for abnormal end message (need technical people), and "N" for information messages.
  Jumping Page: (See notes - for my references)
  Simulation - "what if" analysis. Put S in OK code. Disadvantage is every time you have to log-off to get out of it.
  Modes (See notes and manual - for my reference) - OTxyy calling new modes.
  SAP's R/2 basis system allows 9 modes but user can only use 2 modes only at a time. For example,
• On = Calling up mode n.
• O+ & O- Scroll forward and backward
• I Terminating current mode
• O followed by the transaction code for alternate mode

Screen Customisation: "As user, you cannot customise screens, you can request for customisation to the project team." This customisation is controlled by function code PF10 .. and so on (see notes or manual).

In SAP "?" mark indicates a mandatory field.

A break was called for lunch at 12-30 pm.

After the lunch break, IM and SB demonstrated some functionality of the SAP's RK-S cost centre accounting (See notes -for my reference). The introductory demonstration course was started at 1-30 pm. The demonstrator had gone through some more inscriptions.

Input: Two ways - through G/L (Tb01) and Internal services charges (TK20)

Security: Transaction Tm11. Understanding security is a useful exercise for user. It is not meant to be user friendly. It is on the basis of the responsibility job and security passes would be assigned.

Tm31: It is a transaction to display any table.

Authorisation Master data: Sensitive accounts such as special document posting, year end adjustments. When one create master data in any area there is a need for authorisation.

Reporting: (see notes and manuals - for my reference)

Match Codes: SAP's R/2 Basis system allows generic searching for records - for unique subjects - they can be user defined - the structure of the match codes must be user defined. For all master data match codes are available but for document level it is not available.

Match Code design: It's not a "scan" facility. Design team should design this in order for easy searching. Shortest method (=n.Raw), "=" tells how to search match codes. Design team needs to make all these codes meaningful.

Word Processing: SAP's word processor is primitive. It can store as many records as necessary but it would be a pre-formatted text. Type "et" in function code for entering text (see notes or manual - for my reference).

An Interruption: At 2-30 pm, Mr Rob Thomas has given a short speech on change management issues (see notes - for my reference).

The Introductory course started again with a more demonstration of the SAP system's inscription, as follows:

SAP Integration: (See notes and also manuals and consult with SAP official - for my reference)

Data Base in SAP environment:

Application Data Base - such as balances, months' data.
Document Data Base - ABEZ (document DB) -> 1. ABIB (Doc. Index Actual), 2. ABMI (Doc. Index as a total);
System DB - SYSV (numbering ranges, user security profiles), ATAB
Structure of DB:

Three segments from the viewpoint of users:
- "A" relates to client -> account number & description
- "B" Company Level 99 different segments
- "C" Relates to Fiscal year

Structure of Data Base in Material Master:
- 5 Different levels
  - "A" Client
  - "B" Company
  - "C" Plant - Physical factory
  - "D" Storage Location
  - "E" Bin Management

Number Assignments: (see notes and manuals - for my reference)

Archiving Policy: This is dependent on numbering policy, implication on retrieving - history is not a problem. Rather, "drill down" facilities could be a problem. Producing report is not a problem but one has to be careful about this numbering assignment policy.

Dialogue and Update: (see notes for diagram - for my reference).

Batch Processing (see notes and manuals - for my reference).

SAP Developmental tool:
- ABAP/4 - not a user tool -> Two function: 1. To write new report, and 2. To connect interfaces. ABAP/4 Query (see notes and manual - for my reference) -> user can develop ad-hoc report - user tools. Screen Painter and Assembler are two forms of programming. The former is more flexible than the latter. SAP can be down loaded to off-line PC such as for spread sheet.

The introductory demonstration course closed at 5-00 pm. I came back to the university.

11 June 1992: Thursday

I went to the Phoenix 21 office at 8-40 am. At 9-00 am, I attended a team meeting of the Implementation group. Participants were: GS, RT, SB, AC, LL, IM, RK & BM. As usual, GS (the co-ordinator of the implementation group) began the meeting by reviewing the last minutes.

The following issues were raised and discussed:
- Selecting finance and planning co-ordinator
- Training & presentation to end user
- There will be a steering committee meeting, which will consider whether SPPP is going for SAP's version 5.0B instead of version 4.4c -> its impact -> cost, training and change issue.
- Emphasis on "Total Business System" or IBS, instead of the "stand alone costing system.

It was mentioned that Maintenance Management was a problematic area. They also were looking for a change. At the time, Supply system did not want to change. It was viewed
that co-ordination among teams was a problem. Whether they should use SPPD's standards or BHP-Information Technology's standards - which can be conflicting.

The meeting ended at 9-30 am.

A member of the implementation team (PS) told me, "you know, we feel we are contract excess". The whole day I spent reading some manuals of the SAP system documentation.

It was become apparent to me that the cost classifications at SPPD are in fact dictated by three requirements, viz., statutory (inventory valuation), strategic (product costing, pricing), and operational (managing activities and processes) requirements. Accordingly, two broad levels of classifications have been made - direct and non-direct. For each of these categories a cost pool was assigned. Direct cost is classified as "the costs which are directly related to a job, product or processes". Non-direct costs are "those costs that could not be directly related to a job, product or processes (rather than identified with or directly chargeable to)".

I came back to uni at 4-00 pm.

15 June 1992: Monday

I went to attend for a training course on the SAP's RKO1O modules which was held in SAP's training centre at Chatswood, Sydney, Australia. We reached at the training centre at 9-30 am. The training session started at 10-00 am. Ms Amenda Grant was the instructor. It was a training course on the cost centre accounting (CCA) module. We were provided a computer monitor and manuals of the course. Instructor went through transactions by transactions. We (all the trainee) followed the instructor and had hands on the system. It was an applied learning situation. During the training course I also met other organisational officials who attended the same training course, such as officials from Cultex, Mobil, BHP-transport division (Australian based companies).

At 5-00 pm we (those of us went from BHP-SPPD) went to Ramada Hotel, North Ryde, Sydney, where we lodged during that training period. We had dinner together. It was a social gathering, very informal, but they did talk some business issues as well. The business is not isolated from the social.

16 June 1992: Tuesday

From 9-00 am to 5-00 pm we attended the training course. We came back to hotel at 5-30 pm. (See manuals and notes for different functionality of SAP system for cost centre accounting - for my reference).

17 June 1992: Wednesday

The same training course (ie, RKO1O) was continued from the previous day. The instructor was Ms Amenda Grant. We solved various exercises and spent rest of the day learning various transactions of the RK-S cost centre accounting (in planning area). It is understood that one of the major advantages of the SAP system is integration. It is a table driven system, which are users' defined.

We came back to Ramada hotel (North Ryde, Sydney) at 5-30 pm.
18 June 1992: Thursday

The same course (RKO1O) was also continued on the day. The trainer went through several SAP's transactions on the cost centre planning. We followed the instructions and had hands-on the system. In the morning session we went through how to create cost centre hierarchy and how to distribute costs throughout the system and how to operate cost centre reporting. One of the special features of the SAP system is the setting up tables.

We came back to the hotel at 5-30 pm. At 6-30 we all (10 employees from BHP-SPPD) had dinner together. It was an enjoyable evening.

19 June 1992: Friday

Training course was called off at 1-00 pm. Certificates were awarded for attending the course. We came back to Wollongong at 3-00 pm. Thanks to the SAP International AG and the BHP-SPPD for providing such a training. I have learned a lot as far as technical transactions (inscriptions) are concerned.

22 June 1992: Monday

I went to the Phoenix 21 office at 10-00 am. I looked forward to gain some further appointments. I had chats with a couple of project members (such as SB, RT, BM and SRS)

I read a system documentation manual. I discovered that there would be a management meeting on the following day. I left the phoenix office at 3-00 pm.

23 June 1992: Tuesday

I went to the Phoenix 21 Office at 9-30 am. I heard that there would be a joint team meeting at 10-00 am, which would be held in Conference Room no 1 in building 2 (BHP-IT office, Warrawong, Port Kembla). I attended the meeting. All members of the Phoenix 21 project attended the meeting.

GS (the project co-ordinator implementation team) gave an introductory speech. He indicated what had happened in the last management meeting which was held on the previous day. He told the participants of the meeting that the management had taken a decision to go for the version 5.0C of the SAP system and also decided to extend the scope of the project by including more areas such as Supply, Maintenance and Human Resource system. He further stated that the time for implementing the project had also been pushed forward to for an extra year, which was scheduled earlier for implementing on 1 June 1993. That is, it was decided that the system would be productive only on 1 July 1994. Moreover, he further stated that there would be some structural changes of the project as well.

Following GS's speech, KZ (the project manager - build/develop and install) highlighted some future direction of the project:

- We are looking forward to the status of the costing system to adapt the best practices in the world.
- Adopt an integrated business system approach

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Install using the latest version of SAP (Rel. 5.0C) Implementation by 1 July 1994.

KZ also announced the integrated scope of the project:

Existing:
- Process costing, Job Costing, General Ledger and Material Management

New Areas to include:
- Supply, Maintenance Management, Accounts Payable, Project Management,
  Asset Management, Others (EWAS, Mobile and Controls)

Issues were raised:
- Management of overall SAP implementation
- Project responsibility, Project team, etc.
- RBPD (Rod and Bar Product Division - New Castle) planning to work together with SPPD
- What will be the future task of Phoenix 21.
- Long term strategy
- Acceptance of software package
- Walking away from new supply system.

"All these will have a big impact on cultural change at SPPD", said KZ.

He also mentioned that "senior management team of SPPD endorsed us to carry on the project with 4.4c version, but we will be looking forward to for version 5.0C". KZ further mentioned that "so far what has been done is not wasted". Rather, they were looking forward to one overall design. "Our major concern is change management... needs a lot of work to be done on this change management. Now we are looking forward to the next two years." Question has been raised: "what should the project member do now?" KZ responded, "think individually". He also stated that he would prepare a project plan shortly. It was suggested that re-structuring the project organisation would take at least 3 months. GA asked, "How long can it take for us to re-organise ourselves?" KZ responded,

Well, it will be a slightly different approach" (laughter). "We need to re-visit change management plan. Two years is not a long time for a project of this size. From SPPD's point of view going for a commercial package from a third party... what happens if something go wrong.

The meeting continued until 11-20 am. After the meeting GS asked me to see him at his office. I went to see him at 11-30 am. GS enquired of what impact if at all might have on my work due to the change of the project schedule from 1 July 1993 to 1 July 1994. He mentioned that managing change is a major issue for them. He said, "next one year we are going to see this issue. Now we are shifting from the stand alone costing system development to a total business system approach. We will have one integrated system, which will include Supply Maintenance department as well".

I came back to university at 4-00 pm.

24 June 1992: Wednesday

I went to the Phoenix 21 office (the quasi-laboratory) at 9-45 am. I had chats with a couple
of members of the project. I collected a couple of previous minutes from KZ (project manager - build/design/test team) and also collected a copy of the documentation called the "SAP plan B", which focussed on some major structural change of the project. It seemed to me that the project, at that stage, was a bit of a discontinuation.

I also collected a memorandum copy which was called the "Project Expenditure", which was supposed to be submitted to the group general manager.

25 June 1992: Thursday

I went to the Phoenix 21 office, at 9-00 am. I attended a weekly meeting of the implementation group, which started at 9-00 am. The participants of the meeting were GS, BM, RT, SB, RK, LL, SRS, DK and IM.

As usual the meeting was introduced by GS. There was an apology for AC. GS started the meeting with the following:

We need to go through 'need analysis'. At this moment the status of the project seems to some extent "fragile". There are "lots of confusion", such as the difference between SAP's version 4.4c and the version 5.0c. However, we continue to develop and work with version 4.4c. Maintenance management is going for version 5.0. In version 5.0, some additional functionality is available such as business unit structure, which is not available with version 4.4c.

GS stressed the updated position of training for the co-ordinators for various functional areas and their roles. RT emphasised several issues such as how to train the trainers and what should be the internal training facilities. It was stated that there would be some changes in the steering committee. A further emphasis was given on the need analysis. I collected a copy of the need analysis requirements. Question raised: what could be the possible name of the new project? "Would it be the world class cost management system or Phoenix 21 or something else?" However, it was mentioned that Supply system would be a part of the project. "Try to avoid stand alone operation". "We got to think in an integrated way". Etcetera.

14 July 1992: Tuesday

On return from Paris, France, I directly went to attend the scheduled training course organised by SAP AG, Chatswood, Sydney on the budgeting and reporting modules (ie, RK020/RK030). We were provided computer terminals and course manuals and training folders. The instructor was Ms Amenda Grant. On the day we went through how to maintain different transactions on cost centre planning and reporting systems.

At 5-30 pm we returned to the Ramada hotel at North Ryde, Sydney.

15 July 1992: Wednesday

That day also we went through various functionality of SAP's RK system on cost centre planning and reporting. We went back to the hotel at 5-30 pm.

16 July 1992: Thursday

Sudhir C Lodh: Phd student, Department of Accountancy, The University of Wollongong, Australia. These field diaries are strictly confidential and provided for examination purposes of this thesis only.
The day's training was scheduled for the RK variance reporting system (RK030). The instructor was Mr John Chin (hereinafter JC) from SAP, Sydney. Besides the trainee from BHP SPPD, there were other trainees from different organisations (such as, Cooper & Lybrant, AMP, Cultex Australia) as well attended the training course. JC demonstrated an overview how cost centre accounting system operates in a SAP environment. Then, we looked at various inscriptions that were required for the on-line variance reporting within RK system. We came back to the hotel at 5-30 pm.

17 July 1992: Friday

The instructor of the day was also JC from SAP International AG, Sydney. Similar to the previous training courses we went through various transactions concerning variance reporting under RK system. We came back to Wollongong at 3-00 pm. In the following week, I would be going to attend another course on job order costing (ie, RK110/112 course).

20 July 1992: Monday

We reached at the SAP's Chatswood office at 9-30 am. Only two project member from BHP-SPPD attended the course on Job order accounting (RK-110/112). The course started at 10-00 am. The instructor was Mr Sean Mathieson. He introduced us the adaptability of the RK Job order system and how it can fit with various requirements of the business functions. Mr Mathieson demonstrated several on-line inscriptions concerning the maintenance of order master data, creating order (TK83), changing order (TK82) and displaying order (TK81). The instructor provided us exercises to work through (see Job Orders folder - for my reference). The instructor used both the projector overhead and lab top computer to demonstrate the course. We were following the instruction through on-line terminals.

We came back to the Ramada hotel at 5-30 pm.

21 July 1992: Tuesday

We arrived at the SAP's training centre at 8-45 am. On the day the same (RK-110 course) was also continued. Topics covered in this course include order reporting (analysing a single order, creating an order hierarchy and creating order summerizations), order authorisations, planning order costs and calculation of overhead (both single and multi level). Exercises for each topic were also provided. We solved and navigated through them.

We came back to the hotel at 5-30 pm.

22 July 1992: Wednesday

We reached the SAP's Chatswood training centre at 8-50 am. Till lunch the RK-110 course was continued. Topics covered on the day were: how to carry out statistical posting, posting actual costs, order settlement and accrual management orders within the SAP's RK-A module. During lunch time I met Mr Phil Dent (manager product division) from the SAP International AG, Sydney. We talked about 20 minutes. The outcome of the discussion and meeting with Mr Dent was that I collected two manuals on the system documentations.

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as well as some historical documents about the organisation of SAP company.

After the lunch break, another instructor (Ms Amanda Grant) introduced us the RK112 course. It is a course on job order settlement. During the afternoon the instructor went through the course. We followed her instruction for solving assigned exercises and navigated through the system to learn the course.

We came back to the hotel at 5-30 pm.

23 July 1992: Thursday

We reached to the centre at 9-00 am. The contents of the day's training included: basics of job order settlement, allocating job order cost manually, use of the automated job-order settlement and allocating costs to cost objects. The instructor went through all of these and we followed her.

We came back to the hotel at 5-30 pm.

24 July 1992: Friday

We reached to the centre at 9-00 am. The same course on RK-A Job order Costing was continued on the day up until lunch time. Functionality that were demonstrated on the day's training included posting RK orders, use of preliminary costing and allocations of order costs.

We came back to Wollongong on the same day.

28 July 1992: Tuesday

I went to Phoenix office at 10-00 am. I had chats with a couple of project members. I read some system documentation manuals. I came back to the university at 1-00 pm.

29 July 1992: Wednesday

I reached the Phoenix office at 9-00 am. I collected some costing articles and a consultant report from SRS. I read a system documentation manual on RK-A job order system. I came back to the University at 3-00 pm.

30 July 1992: Thursday

I went to the Phoenix office at 9-00 am. I read a manual on the new development for SAP's release 5.0C. I took some notes from it (see notes - for my reference). I left the Phoenix office at 4-00 pm.

4 August 1992: Tuesday

I went to the Phoenix office at 9-00 am. I made an appointment to see GS. He had been transferred to another department. I left the Phoenix office at 12-00 am.

5 August 1992: Wednesday

I reached at the Phoenix 21 office (ie, quasi-laboratory) at 9-00 am. I had chats with a couple of project members.

At 11-00 am I went to meet GS at Commercial Building. My intention of meeting GS was

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to enquire of why he had left the Phoenix 21 project at that stage. He was one of the initial key fabricators involved in the development of cost management systems (CMS) at SPPD. I asked him what the project's situation was at the time. A part of his response is as follows (I recall my notes).

We are now re-organising the project. Management is looking to include [enrol] more areas [in the project] such as Supply and Maintenance engineering. The cost management system development is viewed as a stand alone system. Management is looking for an independent person who can look after the integrated project.

There are conflicts of interest between various functional owners. We have to have a right project structure. We may appoint consultants. We are now looking at SAP's version 5.0c instead of version 4.4c which we have now. We need to understand business processes and events. We need to show them in flow charts. We need to train people. SAP is a tool only. People must understand the business processes. We may revisit the design. Costing system may not require much change. We have to look at the integration issues carefully. From the strategic point of view, the twelve months delay of the project implementation would provide extra time to revisit other areas such as Supply, Maintenance, all financial and costing, capital costing, service shop and human resources.

We need balance time, costs and resources. Bringing in consultants may expedite the project implementation but that knowledge may walk out through the door when they leave the client's premises. Management wants to get things done quickly. We have to compromise quality as well. Getting management's decisions is difficult. If management would have decided earlier, we then could have gone a bit further down the track. Timing is an important issue - climate is not right. We need to give more attention to the cultural issues and changing the management philosophy.

We have to have a good management philosophy. Now, a cost management system is in place. Previously cost management was neglected. During the second half of the 1980s SPPD had done well. We have to make sure we survive in the world market. To me, short term is now, and long-term is a year from now. We have to improve processes which lead to productivity improvement. We need to focus on international competitiveness, business improvement, TQC. We have to assist the 'Off-The-shelf' system. Application and training within cross functional areas is important. In a large organisation like ours communication is a problem. We need good people. Change management is an important issue. Understanding business processes is a vital task. I am formally off the Phoenix 21 project. I have been assigned another job - that is, productivity and process improvement of the Tin Mill area.

After the meeting with GS I came straight back to the university.

11 August 1992: Tuesday

Sudhir C Lodh: Phd student, Department of Accountancy, The University of Wollongong, Australia. These field diaries are strictly confidential and provided for examination purposes of this thesis only.
I went to the Phoenix 21 office at 9-15 am. I had chats with PS, IM and BM. At 10-00 am, I went to the office of KZ (project manager - development team). I inquired about the recent development of the project. KZ responded:

Now we got a new structure [he drew a tentative project structure - see notes - for my reference] of the project in place. We are going for SAP's R/3 version. We are looking forward to add more areas into our Integrated Business System.

KZ pointed out that in structuring the project team a special attention had been given to appoint a neutral person as a project director, who is not a functional owner for any area of the Integrated Business System. He further mentioned that:

In the past, it is basically the engineers who dictated more in the system design issue. They are still trying to maintain that position. Our concern is to have some neutrality, which would help us developing our IBS. I wish some knowledgeable people from finance area should involve with the Supply and Maintenance area, so that we can at least see some balanced view. Otherwise integration would become a difficult issue.

According to KZ, the implementation team should be headed by a person from SPPD. KZ provided several reasons for this suggestion. For example, they should protect their own interest and meet their own requirements. SPPD should look forward to train their people. After the completion of the design and installation, people from development team could move to the implementation team to maintain the system.

I asked him whether I could make an appointment with Mr J Hall (JH), the chairman of the Phoenix 21 project. KZ replied, "Mr Hall is a busy person". To caught him, it might take a month. I collected some minutes of the previous project meetings (including a minute of the steering committee meeting) from KZ.

After meeting KZ, I came back to my desk. I read some manuals and documents. I came back to the university at 3-00 pm.

12 August 1992: Wednesday

I went to the Phoenix 21 office at 9-30 am. I made an appointment to see CC (a steering committee member) at 12-30 pm. It was really a difficult task to prepare a right set of questions for conducting interview for the first time. However, I prepared a set of informal questionnaire to discuss with CC [see notes- for my reference]. I went to the Engineering Building at 12-20 pm to meet CC. On my arrival he came down to the reception and told me that he was busy at the time and asked me to go back to him at 2-30 pm. I went back to the Engineering Building at 2-30 pm. I went straight to his office. "Hi Sudhir what can I do for you", asked CC. He initiated by saying, "tell me how SAP system works?" He then took a pen, drew a diagram on a whiteboard. He then started explaining the possible linkages that Maintenance functions has with various departments with the SPPD. We also discussed about the possible linkages of SAP modules that were applicable for the Maintenance department. He also mentioned about the proposed structure of the project team. He emphasised for establishing teams taking from cross functional area, so that it

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would facilitate integration issues.

I then asked him a couple of questions (see interview document). Our discussion ends at 4-00 pm. I came back to the university.

13 August 1992: Thursday

I went to the Phoenix 21 office at 2-00 pm. I had chats with a couple of project members. I made an appointment with KR1 (Manager - Accounting Integration and Development team) for an informal interview, which was scheduled for Monday 17 August 1992 at 2-00 pm. I came back to the university at 4-00 pm.

17 August 1992: Monday

I went to the Phoenix office at 1-45 pm. I conducted an informal interview with KR1 at 2-00 pm. (See Appendix 3). The interview continued till 3-30 pm. I came back to the university at 4-30 pm.

19 August 1992: Wednesday

I reached the Phoenix 21 office at 9-30 am. I read a manual on SAP's RM system description functions. I took some notes (see notes - for my reference). I then arranged to conduct an interview with RT (change manager at the time). He joined the project in June 1992. I collected two articles from SRS. I left the Phoenix office at 3-30 pm.

20 August 1992: Tuesday

I arrived at 11-20 am. I confirmed the appointment with RT. At the time, all the project team members had gone for attending a farewell lunch party. It was a farewell for SB (a member of the implementation team). I came back to the university. It was 12-30 pm then.

21 August 1992: Friday

I went to the Phoenix 21 office at 11-45 am. I had chats with a couple of members of the project. I confirmed my going to Sydney for the SAP training course. At 1-00 pm, I conducted an interview with RT (see Appendix 3 for interview documents). I came back to the university at 4-00 pm.

24 August 1992: Monday

We reached the SAP's Chatswood training centre at 9-30 am. The training started at 10-00 am. It was a course on RF10 Financial systems. The instructor was Mr Mark Lifton from SAP. We were provided on-line computer terminals. We spent all the day for navigating through various on-line functionality of the RF system. The topics covered were: Organisational Remarks (RF Unit 00), RF - Environment (RF Unit 11), Posting - Overview (Unit 12), Master File Maintenance - General Information (Unit 13), Customer Master Record (Unit 14), Vendor Master Record (15)

[I noted (for my reference) some important concepts:

- Documentation is an important concept in SAP system. Each document is a business transaction. Posting a document rather posting an entry.
- Open items - item which is pending - ingoing and outgoing - clearing - matching -

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open invoicing - logical and physical matching.

- Two stage processes: Dialogue task and update task. Logical commitment - automatic updating. RF system is basically a feeder system.
- SAP system is divided into a number of logical data bases which made it possible to navigate around the system. In the SAP system there exists three different types of data bases such as statistical data base, financial data base and system data base (See John Chin's diagram - for my reference).
- Posting overview, Table control, Off-the-Shelf software, Define the parameter by users, customising the system - have to be looked at (for my reference)

25 August 1992: Tuesday

We reached SAP's Chatswood training centre at 8-55 am. The following units were covered on that day's training - G/L Master Record (Unit 21), Post/Display a document (Unit 22), Change/Reverse a document (Unit 23), Accounting periods (Unit 24), Value added tax (unit 25) and foreign currency (Unit 26). We returned to the hotel at 5-30 pm.

26 August 1992: Wednesday

We arrived to the training centre at 8-50 am. The following units of were covered on the day's training from the course RF system: Posting Control (unit 31), Business area (unit 32), Monthly Balances (unit 33), Display/Change Single Items (unit 34), Account Management (unit 35), One-time Accounts (unit 36), Head Office/Branch (unit 37).

We returned to the hotel at 5-20 pm.

27 August 1992: Thursday

We went to the training centre at 8-55 am. Units covered on the day were: clearing with/without document (unit 41), on-line - check print (unit 42), request for list (unit 43) and net posting (unit 44).

We went to the hotel at 5-30 pm.

28 August 1992: Friday

We went to the centre at 8-50 am. It was the last day for RF training course. The units covered on the day were: Recurring Entry (unit 51), RK Interface (unit 52), and Planned Documents (unit 53).

We left SAP's Chatswood office at 12-30 pm and came back to Wollongong at 2-30 pm.

1 September 1992: Tuesday

I went to the Phoenix 21 office at 9-30 am. I had a chat with some team members (namely, BM, HF, IM, SRS, RT and DK). I tried to get some information about the structural changes of the project teams. I collected a manual on the RF system user documentation version 4.2 from HF. I also collected some materials on change management issues from RT.

At the time, there were more groups (allies) joined (enrolled) to the project such as Supply, Maintenance Management and Human Resources.

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I left the office at 1-30 pm and came back to the University.

3 September 1992: Thursday

I went to the Phoenix 21 office at 11-15 am. Immediate after the arrival I went to see KZ (project manager - development team). I enquired about what the project situation at the time. He gave me a copy of the update version of the project plan, which included the overall objectives of the project, a generic plan for the requirement definitions' phase and the project structure. I also confirmed seeing him for an informal interview on the following day.

I left the Phoenix office at 3-00 pm.

4 September 1992: Friday

I arrived the Phoenix office at 9-30 am. I met Mr Steve Sanders (hereinafter SS) who joined in the project as a new implementation manager. It was a roster day for BHP's fortnightly paid officials. A very few officials were at work on the day.

At 10-00 am I conducted an interview with KZ in his office, building 1, Warrawong IT. I handed over a copy of informal questionnaire to him. No tape recording was done. I took notes (see Appendix 3 for interview document). The interview continued for an hour. After the interview I came back to my desk.

At 1-00 pm, I conducted another interview with BM (an ex-leader of accounting implementation group). I prepared a questionnaire for him as well. The questionnaire was prepared based on the nature of work he/she was involved with at the time. The timing of the interview was also taken into consideration in preparing a set of tentative questionnaire. At the beginning of each interview I stated the interviewee that: "you know, to ask and prepare a right set of questionnaire is difficult, yet I made some tentative questions to keep track our discussion and the development of the project". The interview continued till 3-00 pm. I took notes (see Appendix 3).

I came back to University at 4-00 pm.

8 September 1992: Tuesday

I went to Phoenix 21 project at 10-00 am. I collected a few key individuals names who were in-charge of the cost office at the time and whose office was in the Commercial Building. I phoned to Mr Esa Mannisto who was in-charge of the cost office at the time. I could not get through to him, he was away for a week, said an official. I did not do much on the day. I came to the University at 1-00 pm.

9 September 1992: Wednesday

I arrived the Phoenix office at 9-30 am. Most of the team members were away for the SAP training in Sydney. I had a chat with GA (a project member) and made an appointment to conduct an interview with him on the following Friday at 11-00 am.

I read a manual of SAP's RM system - Descriptions of functions. I also met RT. He gave me a user ID to use for CBT (Computer Based Training), which was design to learn some

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preliminary functionality of the SAP on-line system. He also showed me how to use PC based SAP training aid.

I left Phoenix 21 office at 12-30 pm.

10 September 1992: Thursday

I went to the Phoenix office at 10-00 am. I re-scheduled my appointment with Mr Geoff Armstrong.

I went through a PC based training aid which was designed as a self-learning tutorial course to familiarise with some key terminologies of SAP system. It also aimed at teaching major commands that were necessary in order to use the system. The name of the course was RS010 Version 1.0, c 1990.

I came back to the university at 3-30 pm.

15 September 1992: Tuesday

I went to the Phoenix 21 office at 9-30 am. At 10-00 am, I conducted an informal interview with GA (a project member costing integration team). The interview continued till 11-15 am. (see Appendix 3 for interview document).

16 September 1992: Wednesday

I reached the Phoenix 21 office at 9-30 am. I met KZ (manager- developmental team) and made an arrangement for a desk at an office cube (D11). Also, I had chats with a couple of project members.

I went through the CBT (Computer based Training) via Phoenix 21 Mainframe System. A clock number (ie password to access to the program) was also provided to me. I went through a most commonly used transaction in the SAP system which is TK31. This transaction is used to view costs associated with any cost centres.

I also collected a minute from KZ, which stated that the first phase of the project has been approved by the general manager. I left the office at 3-15 pm.

17 September 1992: Thursday

I went to the Phoenix office at 9-10 am. At 10-00 am I conducted an interview with SRS (see Appendix 3). At 11-00 am, I attended a team meeting led by Accounting Integration group. It was the first team meeting after the re-structure of the project. The participants of the meeting were KR1, AS, SRS, DR, PS, PH, HF, DP, GA, BM, DK, IM, and MR.

The issues discussed in the meeting were:

- Prioritise the business requirements
- Review business processes by October
- Preparation of context diagram and flow charting the required business processes
- Training and development
- Ronald Fiels (a SAP consultant) visits
- SAP's version 4.4c or 5.0c
- Documentation procedures - BHP-SPPD format or BHP-IT Format.

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It was a meeting on designing the scope of the "work breakdown structure". That is, whom to do what and whether every one was happy with what they were doing and so on. The meeting ended at 11-00 am. I took notes. At 2-00 pm, I conducted an interview with HF (a project member who were in charge of designing RF-GL system at the time) (see Appendix 3).

I came back to the university at 3-30 pm.

18 September 1992: Friday

I went to the phoenix 21 office at 9-30 am. At 10-00 am I conducted an interview with Mr David Kirton (DK), a project member involved with the RK-S costing area (see Appendix 3 for interview file). The interview was ended at 11-45 am. At 12-30 pm I left the phoenix office and came back to the university.

22 September 1992: Tuesday

I went to the Phoenix office at 9-35 am. At 10-00 am I conducted an interview with IM, a project team member, who at the time was involved with the RK-S cost centre accounting and the RA asset accounting areas (see Appendix 3 for interview document). After completing the interview at 11-15 am, I came back to the university.

23 September 1992: Wednesday

I went to the Phoenix 21 office at 9-30 am. I conducted an interview with Phil Sebbens, a project member from engineering department. The interview continued for an hour and a quarter (see Appendix 3 for interview document). During lunch I had a chat with RT. RT showed me a document which shows how a standard documentation procedure be prepared that is approved by the Standard Association of Australia (SAA). I collected some of these documents labelled as Quality System Manual -BHP Steel (publication and distribution of which are controlled by the TQC Development Department).

I came back to the university at 3-30 pm.

24 September 1992: Thursday

I went to the Phoenix 21 office at 9-35 am. At 10-00 am I conducted an interview with PP (a project member). At the time, he was involved with costing area. The interview continued till 11-30 am (see Appendix 3 for interview document). After conducting this interview I spent about an hour reading some documents.

I came back to the university at 1-00 am.

25 September 1992: Friday

I went to the Phoenix 21 office at 11-30 am. I rang Mr Essa Mannisto (cost accountant) for an appointment. At 1-00 pm I conducted an interview with VL, a project member, who at the time engaged with the labour costing and job costing side of the project. The interview continued for an hour. I took notes while we were discussing (see Appendix 3 for interview documents). I came back to the university at 3-30 pm.

29 September 1992: Tuesday

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I went the Phoenix 21 office at 9-30 am. At 10-00 am I conducted an interview with Ms Amenda Shain (AS), a project member. I took notes while we were discussing (see Appendix 3 for interview discussion). The interview continued till 11-20 am. At 11-30 am I went to see RT (change manager). He took me to show an interactive video tapes which is a self-learning computer package for change management. The package was developed by the Applied Learning International, Inc. of Illinois, USA. There were three such videos: Understanding Change (10263S10), In times of Change: Helping Ourselves (10264S10), and In Times of Change: Helping Others (10263S10). I went through the Understanding Change interactive Video. (See the learner's guide for more - for my reference).

I left the BHP-Information Technology office at 2-30 pm.

30 September 1992: Wednesday

I went to the Phoenix 21 office at 9-30 am. At 10-00 am I conducted an informal interview with Ms Pia Hawkins (PH), who at the time was engaged with the BARS (BHP Accounting and Reporting System) and G/L system. The interview continued for an hour (see Appendix 3 for interview discussion).

At 1-00 pm I conducted another interview with Mr Bill Wong (BW), who at the time was working with the maintenance management group. It was continued till 2-05 pm (see Appendix 3 for interview discussion). At 2-10 pm, I went for the interactive video lesson on In Times of Change: Helping Ourselves. I went through the interactive video for about two hours. Then, I came back to the university.

1 October 1992: Thursday

I went to the Phoenix 21 office at 9-40 am. At 10-00 am I conducted an informal interview with Mr John Bown (hereinafter JB - project director at the time). The interview continued for an hour. I took notes while we were discussing (see Appendix 3 for interview document). I came back to my desk and had chats with some of the project members. I prepared a questionnaire for an interview with EM (cost accountant).

I went to the commercial building to meet EM at 1-45 pm. We discussed several issues (see notes - for my reference). He mentioned, "we are now in an interim situation, we are finding very hard to manage work. We lost a lot of knowledge on our existing DISC system". "We build certain level of uncertainty", said EM. He further stated, "I believe it will exist at least next 12 months until such time we could implement our new system." He gave me some transparencies on the DISC costing system concerning how it works. I requested him for some key individual names in the costing area whom I could discuss the development of cost management system at SPPP. He provided four individuals' names. They were Ms Janice Blackley, Ms Lauri Milan and Richard Jusinaski. Our discussion meeting ended at 2-45 pm. I came back to the university.

6 October 1992: Tuesday

I went to the Phoenix 21 office at 1-30 pm. I had chats with RT, IM and SRS. From the informal talk I discovered that there would be a project team meeting on Thursday 8 October 1992, which would start between 9-00 to 11-00 am and would be held at the

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Warrawong Conference Centre.

At 2-00 pm I conducted an interview with DR (David Rouse), a project member who was at the time involved with the project design methodology and was a member of the Maintenance management team (see Appendix 3). The discussion continued till 3-35 pm.

7 October 1992: Wednesday

I went to the Phoenix 21 office at 9-15 am. At 9-30 am I conducted an interview with Mr Rodney Winbank (a leader of the project technical support team) (see Appendix 3 for interview discussions). At 10-45 am I went through an applied learning course, that is, the Interactive Video training course on In times of change: Helping ourselves. While going through the interactive video instructions I took notes (see notes - for my reference). I left the Phoenix 21 office at 4-00 pm.

8 October 1992: Thursday

I arrived at the Warrawong conference centre at 8-50 am.

At 9-00 am I attended a project team meeting which was held in the conference room no 2. The participants of the meeting were JB, SS, KZ, RT, KR1, RW, DK, GA, AS, PS, MR, DP, DR, PH, BW, BM, BH, IM, SR-S, VL and 17 others.

The agenda of the meeting was as follows:

- Introduction by JB (the project director).
- Presentation by B Harvey & W Burkinshaw about SAP user conference
- Presentation by R Winbank about the technical support
- Commentary by S Senders (implementation manager) on user conference
- Evaluation of existing job numbering system by K Reid
- Reports on the visits of R&BD (Newcastle) by B Harvey
- Project plan prototype by A Shain.

I took notes (see notes - for my reference). At 11-30 am, I attended a group team meeting chaired by KR1. I came back to the university at 12-00 am.

30 December 1992: Wednesday

I decided to conduct interviews with the functional owners of the project. They are key individuals of the project implementation. I collected their telephone numbers from the switch board of BHP- SPPD. I called all five functional owners of the project over telephone. They were: Mr P. Vassallo (PV) from Finance and Planning, Mr C Cooper (CC) from Maintenance Engineering, Mr K Rommel (KR2) from Supply department, Mr P Wren (PW) from Engineering and Mr P Snowden (PS1) from Human Resources department. I made appointments with PV for Tuesday 5 January 1993 (time 9-00 am) and PW on Wednesday 6 January 1993 (time 9-00 am).

5 January 1993: Tuesday

At 9-00 am, I conducted an interview with PV at his Commercial Building office. The interview continued for an hour. It was tape recorded. At 3-00 pm I conducted another interview with KR2 at his Commercial Building office. The interview continued about one
hour and it was also tape recorded. I left the commercial building at 4-30 pm and came back to the university.

6 January 1993: Wednesday

I was supposed to go for conducting an interview with PW (Functional Owner - Engineering) at 9-00 am. He rang me and cancelled the appointment. I looked forward to make another appointment with him. I rang other functional owners for appointments.

12 January 1993: Tuesday

I went to the Phoenix 21 office at 9-45 am. I had chats with a couple of project members. Most members were busy with the functional design of SAP's new version 5.0B system. The project members in the Maintenance management area were engaged in a training course. I had a chat with DK. We discussed about some issues of the Tin Mill products and processes costing. I requested him to give a call when they would prototype these issues. I left the office at 11-00 am and came back to the university.

21 January 1993: Thursday

I went to the Phoenix 21 office at 9-30 am. I met JB (the project director) and made an appointment to conduct an interview with him on the following Thursday.

I had chats with SS (implementation manager), PS, PN and IM. Most of the members were attending training courses. Things were very quite and steady at the time. It might be that after the completion of the preliminary training courses the project members are preparing themselves for another start to design system. I left the office at 11-00 am and came back to the university.

28 January 1993: Thursday

I conducted an interview with JB at 10-00 am. At 1-00 pm I left the office.

8 February 1993: Monday

I went to the Phoenix 21 office at 10-40 am. I collected some information about the senior management hierarchical structure within BHP. I collected an updated project plan for Phoenix 21. I had chats with a couple of project members. I made an appointment with KR1 (the integration manager) to conduct an interview on 16 February Tuesday at 10-00 am. I left the office at 12-30 pm and came straight back to the university.

From 9 February to 4 April 1993

I frequently dropped by to the Phoenix 21 office. I did not keep any diary for some days visits.

5 April 1993: Monday

I went to the Phoenix 21 office at 9-50 am. I conducted an informal interview with GA at 10-00 am. I attended a group team meeting at 11-30. I introduce myself with Mr Gary Bull (hereinafter GB) who at the time was looking after the TPM (Total Performance Management) area. I made an appointment to conduct an interview with him. I left the Phoenix 21 office (ie. the quasi-laboratory) at 12-30 pm.
8 April 1993: Thursday

I went to the Commercial Building at 2-00 pm to collect a manual on the Planned Value Control (PVC) concept from GS. It was incorporated into the cost management systems at SPPP during the mid 1980s. It was established by the Nippon Steel Corporation (NSC) from Japan.

19 April 1993: Monday

I went to the Phoenix 21 office at 10-00 am. I had chats with a couple of project members. I collected five functional design papers prepared by the Finance & Planning team from KR1 (manager integration team). I left the office at 12-30 pm.

20 April 1993: Tuesday

I went to the Phoenix 21 office at 10-00 am. I had chats with a couple of the project members. I collected some functional design papers for Engineering and Maintenance management from PS and BW respectively. I had a chat with a SAP consultant (Mr J Chin) regarding the use of their materials in my thesis. I left the office at 12-15 pm.

23 April 1993: Friday

I conducted an informal interview with GB (senior accountant, Business Planning & Management Reporting) at 3-00 pm. It was not long GB enrolled in the Phoenix project. At the time, he was assigned the responsibility to prototype business reporting for Total Performance Management (TPM), Planned Value Control (PVC) and Key Performance Indicators (KPI). He worked for BHP-SPPP for above 20 years. He received MBA degree from the university of Wollongong. I went to his commercial building office at 3-00 pm. The interview continued till 4-30 pm. The interview was tape recorded. From the discussion I had an understanding about the processes of the development of TPM at BHP-SPPP. I collected four review booklets from GB. They were 1) MIS Monthly Business Review Booklets: 1988 by PA Consulting Group, 2) Management Business Review Reports for the Superintendents, 3) Performance Management Program: Draft Findings and Recommendations- GM Progress Review, 19 October 1988, and 4) Monthly Business Review for the Plate Mill Recommendations and implementation. I also collected some presentation transparencies on TPM from GB.

I left his office at 4-35 pm and came straight back to the university.

27 April 1992: Tuesday

I went to the Phoenix 21 office at 11-30 am. I returned a functional design paper that I took from PS. I had chats with a couple of members of the project.

I called GB over phone at his Commercial Building office. I returned the booklets that I borrowed from him. I collected another booklet from him: "Working Capital Management BHP-Steel - A Guidebook". I asked him whether I could get any further documents on the subject. He gave me some loose copies of transparencies which they prepared for presentations.

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I left his office at 1-00 pm and came back to the university.

4 May 1992: Tuesday

I went to the Phoenix 21 office at 10-00 am. I had chats with a couple of project members. We talked about several aspects of the project developments. Most of the team members were busy to prototype the functional design of the project. Mr Ronald Fiels (a consultant from SAP) were down there. I requested the Supply team for a copy of their functional design paper. I left the office at 11-00 am and came straight back to the university.

11 May 1992: Tuesday

I went to the Phoenix office. I did not write any diary for any involvement.

18 May 1992: Tuesday

I went to the Phoenix office. I did not write any diary for any involvement.

25 May 1992: Tuesday

I went to the Phoenix office. I did not write any diary for any involvement.

1 June 1992: Tuesday

I went the Phoenix 21 office at 9-30 am. An intention of the visit was to seek further interactions (appointments) and information. At the time, the project teams had been engaged in prototyping the detailed design of the project. I had chats with a few project members of the costing team. From the discussion it appeared that there existed 'power struggle' to integrate different functional groups' efforts. A project member stated, "we need to establish theories within finance and planning to focus the future direction of the project, which is at the moment lacking". It seemed that there were tensions in regard to the acceptability of accounting based solutions at the shop floor - such as by Maintenance management groups.

I made an appointment with BH (a leader for Supply team of the project) to conduct an interview on the following Monday the 7 June 1993. I left the Phoenix 21 office at 11-30 am and came straight back to the university.

7 June 1993: Monday

I went to the Phoenix office. I did not write any diary for any involvement.

15 June 1993: Tuesday

I went to the Phoenix office. I did not write any diary for any involvement.

12 July 1993: Monday

I went to the Phoenix office. I did not write any diary for any involvement.

28 July 1993: Wednesday

I went to the Phoenix office at 10-30 am. I had no appointment with anybody. It was just a 'dropped by visit' to the quasi-laboratory. I had a chat with a couple of project members.

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such as DP, DK, SRS and BM. Through informal talks (chats) it appeared to me that the project had a lots of complex issues to be resolved. For example, at the time the costing team was not happy with the activity design, setting up the activity tables, etc.

At the time, training for users was on-going. The project members were busy with the detailed design of the IBS. They were engage in prototyping various functionality (inscriptions) and preparing themselves to input 1994-1995 budget figures using the new technology.

In general, at the time if you ask a project member about the position of the project they used to say that there are lots of works to be done. "Most people don't realise what's involved", stated by a member. "Validation (internal logic of the machines) issues are important".

Finally, I gathered some information about a meeting which was designed to bring all the team leaders from various areas together and to evaluate their weekly work progress. At the time it was held in every Monday lunch time. Unfortunately I could not attend any of those meetings because of my work involvement at the university.

I left the Phoenix 21 office at 11-30 am.

2 August 1993: Monday

I went to the Phoenix office. I did not write any diary for any involvement.

28 September 1993: Wednesday

I did not keep any diary for last three four visits to the Phoenix 21 office (quasi-laboratory). I went to Phoenix 21 office at 9-30 am. It was a 'drop by visit' to update what's happening at the time. I had a chat with a couple of project members. I discovered some sceptical opinions about the project. A project member (PS) uttered, "we are tumbling with lots of issues in our (engineering) area". I found that at the time the project members were busy in the detailed design of the IBS project. I left the Phoenix office at 11-00 am.

30 September 1993: Thursday

I did not go to Phoenix 21 office. I called Mr Peter Wren (functional owner) engineering department to make an appointment. I could not get through to him. Then, I called KR1 (integration team leader of the Phoenix project) for an appointment to conduct another interview with her. It would be the third interview with her. In addition to informal interviews I had a series of interactions with her. My intention to meet her at the time was to update information about the project. It would be held on the following morning at 9-00 am.

1 October 1993: Friday

I went to the Phoenix 21 office at 8-50 am. I conducted an interview with KR1 at 9-00 am. (see Appendix 3 for interview discussions). At that stage I started collating the empirics I collected and observed through my field work. I decided to stop going to the Phoenix project (what I call quasi-laboratory). I felt like supporting Latour (1987, 7) who advanced an analogy "when enough is never enough" - that is, science does know yet what is to be

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considered as discovery of facts and technology. That is, the question remains when such an investigation process into the quasi-laboratory can be considered enough. It is rather socially constructed.

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