

# **Workplace Design in the Knowledge Economy: A Case of the NetWorkPlace™©**

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## Abstract

This thesis explores a way to inform the architectural design process for contemporary workplace environments. It reports on both theoretical and practical outcomes through an exclusively Australian case study of a network enterprise comprised of collaborative, yet independent business entities.

The internet revolution, substantial economic and cultural shifts, and an increased emphasis on lifestyle considerations have prompted a radical re-ordering of organisational relationships and the associated structures, processes, and places of doing business. The social milieu of the information age and the knowledge economy is characterised by an almost instantaneous flow of information and capital. This has culminated in a phenomenon termed by Manuel Castells as the *network society*, where physical locations are joined together by continuous communication and virtual connectivity.

A new spatial logic encompassing redefined concepts of space and distance, and requiring a comprehensive shift in the approach to designing workplace environments for today's adaptive, collaborative organisations in a dynamic business world, provides the backdrop for this research. Within the duality of space and an augmentation of the traditional notions of place, organisational and institutional structures pose new challenges for the design professions. The literature revealed that there has always been a mono-organisational focus in relation to workplace design strategies. The phenomenon of inter-organisational collaboration has enabled the identification of a gap in the knowledge relative to workplace design. This new context generated the formulation of a unique research construct, the NetWorkPlace™, which captures the complexity of contemporary employment structures embracing both physical and virtual work environments and practices, and provided the basis for investigating the factors that are shaping and defining interactions within and across networked organisational settings.

The methodological orientation and the methods employed follow a qualitative approach and an abductively driven strategy comprising two distinct components, a cross-sectional study of the whole of the network and a longitudinal study, focusing on a single discrete workplace site. The complexity of the context encountered dictated that a multi-dimensional investigative framework was required to be



devised. The adoption of a pluralist ontology and the reconfiguration of approaches from traditional paradigms into a collaborative, trans-disciplinary, multi-method epistemology provided an explicit and replicatable method of investigation.

The identification and introduction of the NetWorkPlace™© phenomenon, by necessity, spans a number of traditional disciplinary boundaries. Results confirm that in this context, architectural research, and by extension architectural practice, must engage with what other disciplines have to offer. The research concludes that no single disciplinary approach to either research or practice in this area of design can suffice. Pierre Bourdieu's philosophy of 'practice' provides a framework within which the governance and technology structures, together with the mechanisms enabling the production of social order in this context, can be understood. This is achieved by applying the concepts of position and positioning to the corporate power dynamics, and integrating the conflict found to exist between enterprise standard and ferally conceived technology systems. By extending existing theory and conceptions of 'place' and the 'person-environment relationship', relevant understandings of the tensions created between Castells' notions of the *space of place* and the *space of flows* are established.

The trans-disciplinary approach adopted, and underpinned by a robust academic and practical framework, illustrates the potential for expanding the range and richness of understanding applicable to design in this context. The outcome informs workplace design by extending theoretical horizons, and by the development of a comprehensive investigative process comprising a suite of models and techniques for both architectural and interior design research and practice, collectively entitled the NetWorkPlace™© Application Framework. This work contributes to the body of knowledge within the design disciplines in substantive, theoretical, and methodological terms, whilst potentially also influencing future organisational network theories, management practices, and information and communication technology applications.

The NetWorkPlace™© as reported in this thesis, constitutes a multi-dimensional concept having the capacity to deal with the fluidity and ambiguity characteristic of the network context, as both a topic of research and the way of going about it.

## List of Key Words

- ❑ NetWorkPlace™
- ❑ workplace design
- ❑ network
- ❑ network enterprise
- ❑ organisation
- ❑ inter-organisational
- ❑ supply chain
- ❑ trans-disciplinary
- ❑ collaboration
- ❑ knowledge economy

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# Statement of Original Authorship

The work contained in this thesis has not been previously submitted for a degree or diploma at any other higher education institution. To the best of my knowledge and belief, the thesis contains no material previously published or written by another person except where due reference is made.

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

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**Chapter 1 INTRODUCTION:  
the NetWorkPlace™© Phenomenon.**

Chapter 2 LITERATURE REVIEW

Chapter 3 METHODOLOGY

Chapter 4 CASE STUDY

Chapter 5 ANALYSIS – Network Dimension

Chapter 6 ANALYSIS – Local Dimension

Chapter 7 DISCUSSION

Chapter 8 CONCLUSION

# Chapter 1      **INTRODUCTION: the NetWorkPlace™© Phenomenon.**

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*Like all professionals, architects and planners have particular responsibilities. Our job is to look at humanity, to look at the environment in which humanity finds itself, and to find ways of reconciling the two. By becoming architects we have chosen to effect this reconciliation between the needs of those people and the environment through the medium of making buildings.*

(Geoffrey Broadbent in Mitchell, 1993)

## **1.1.0      Introducing the NetWorkPlace™© <sup>1</sup>**

In attempting to address the field of workplace design in modern corporations, it is essential to firstly understand what now constitutes the concept of a contemporary organisation. Manuel Castells' (2000) notion of the information age and the consequent emergence of the network enterprise as a commercial entity stimulates the need to clarify answers to some initial questions. Is it business as usual? What is now usual?

Perhaps the most important impact relative to the advent of the knowledge economy in contemporary business has been a shift in the very concept of 'organisation' as an economic and social entity. "Once considered to be semi-permanent and routinized by definition, ideal organizations increasingly have come to be seen as flexible, change-oriented, and able to shift their boundaries, alliances, and partnerships rapidly to meet changing conditions" (King & Kraemer, 1998: 191). Developing technologies increasingly permit anytime, anywhere communication, synchronous and asynchronous collaboration, and linkages in operational processes within and between organisations (Mitchell, 1996).

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<sup>1</sup> The term denoted as NetWorkPlace™© is the invention of the author and was first utilised in the public domain on 15 August 2002 to identify the unique research construct generated by the context described in this PhD dissertation. It is intended thereafter in its application, to encapsulate the complexity of collaborating contemporary employment structures embracing both physical and virtual work environments and practices.

The concept of 'ad-hocracy' characterised as a fluid, flexible organisation in which members come and go as their needs or interests change, has emerged as competition for the traditional concept of the bureaucracy. An enduring definition of bureaucracy was provided by Max Weber in *The Protestant Ethic and the Spirit of Capitalism* written in 1930 (quoted in Smart, 1999: 271) as being: "a large hierarchical organization that is governed by formal rules and regulations and has a clear specification of work tasks. Its three main characteristics are that it has a division of labour, hierarchy of authority, and an impartial and impersonal application of rules and policies."

It has been suggested more recently that we are at a stage of modern capitalism which includes "elements of post-modernity and multi-nationalism" and we are part of "a new global form of techno-capitalism in which world markets are being rationalized and reorganized to maximize capital accumulation" (Kellner, 1999: 188). Harvey (2003: 111) claimed that the knowledge economy has placed us in a position of uncertainty where "the advanced capitalist countries, which at best seem to be steering towards another bout of bureaucratic management of capitalism embedded in a general politics (which swings back and forth between *laissez-faire* and state interventionism) and at worst to be continuing down the blind ideological track which says that the market always knows best."

The literature (refer Chapter 2) would suggest that much of the rhetoric about profound change in organisations has been speculative, undisciplined, and unsubstantiated, based more on idealised views of what organisations ought to be rather than on the practical realities that shape organisational form and function (Mitchell, 1999a; Gladwell, 2000). There are many examples where technology advances have contributed to the formulation of organisational alliances and helped in achieving structural decentralisation. However, equally convincing arguments in support of the suggestion that information and communication technologies have given new life to the traditional bureaucracy appear to be just as prevalent. Flattening of organisational structures throughout the period of economic rationalism saw the elimination of many middle managers, an initiative which has been portrayed as delivering greater empowerment to the remaining employees (Nonaka & Takeuchi, 1995).

This thesis, through the NetWorkPlace™ study clearly indicates however, that technological and structural change can just as easily enable significant increases in organisational centralisation, tighter monitoring and control of employee activity,

more rigid attempts to enforce compliance with the desires of management, and the redesign of tasks and physical workplace environments in ways that make it difficult for employees to act outside of prescribed policies and patterns.

Most research suggests that organisational elites typically use their control over resources in ways that perpetuate their power (King & Kraemer, 1998). The fundamental question of organisational politics regarding who wins and who loses from the introduction of change is raised. Some commentators have predicted that information and communications technologies will shift power to technocrats (Postman, 1992). Others have suggested that the continued introduction of new technologies will strengthen pluralistic features of organisations by providing different interest groups with the tools for wider interaction and engagement (Das & Teng, 1997; 1998). Greater utilisation of communication technologies thus has the capacity to change the nature of the work environment in both positive and negative ways (King & Kraemer, 1998). Virtual work facilitated by information technology can both overcome barriers and widen the social network but it has been shown to also create barriers, isolating people from social face-to-face interaction (Holtham & Ward, 2000).

The resultant ecology formed through inter-organisational network relationships can be convoluted and complex. It is not yet clear whether the powerfully seductive vision of the purported move from hierarchical economic organisation to one of the network enterprise format, has been either comprehensive or sensitive to human needs in its consideration of what must change in relation to both work processes and work 'places'. One thing is quite clear however: rhetoric and ideological enthusiasm will not substitute for the reality of robust empirical research.

### **1.1.1 Pondering the Context**

Transition, change, and progress through the ages have contributed to the meaning of context, but the added complications, complexities, and the sometimes chaotic post-modern world have blurred the edges, confused the focus, and perhaps unwittingly distracted attention from the true impact of such context. The emergence of the knowledge economy and the network enterprise has resulted in a corporate world wherein designers are forced to reconsider the relevance and meaning of this new context (Stone, 2005). It has produced a confusing 'place'



indeed in which designers, by the very nature of their role, find themselves immersed.

Such circumstances doubtlessly prompted Arefi (1999: 186) to comment that “it is essential to design places not just as locations, but based [also] on how to connect them.” This notion encapsulates the challenge which inspired in part, the undertaking of the NetWorkPlace™ study research and the resultant compilation of this thesis. Embodied firmly in the challenge and of paramount importance to designers is Castells’ (1996; 2000; 2004) concept of a ‘space of place’ and a ‘space of flows’, the context presented by the flow-on effects of globalisation and the notion of the network society.

### **1.1.2 Place and Flows**

It is necessary then for designers to fully comprehend the concepts and consequent implications of Castells’ (2000) notions of space in order to harness the benefits and overcome the obstacles presented by this redefined spatial regime of ‘place’ and ‘flows’.

Schwarz’s (2003) case study research revealed that in recent times there have been substantial shifts in the spatial and technological orders of office work. However he found the vision presented of placeless work too simplistic and unsubstantiated. His empirical investigation pointed to more nuanced changes in what he referred to as the regimes of space and technology. He suggested that:

“a spatial regime in the world of work is a complicated configuration that comprises many different dimensions, such as the designed spaces in the office, space policies, the spatial practices of workers, symbolic values attached to space, the rhetoric of space, and cultural sentiments about space.”

(Schwarz, 2003: 255)

In short, space is still important in both individual and social terms, but it is the configurations and connections between places enabled by new technologies which have the potential to change the dynamics of the spatial regime. The utilisation, mastery, and control of technology have the potential to take on a symbolic function equivalent to the status afforded the ‘corner office’ in a traditional workplace setting. The role of technology and that of space are thus intertwined in a consideration of the reorganisation of work.

### 1.1.3 The Gaps and the Point of Departure

The phenomenon of new inter-organisational contexts has enabled the identification of a gap in the knowledge relative to workplace design. The literature and research available indicate that there has always been a mono-organisational focus in relation to workplace design strategies (Duffy, 2000; Duffy et al., 1998). The specific investigation of workplace design across inter-organisational contexts prior to the NetWorkPlace™ study had not been attempted (Smith, 2003). It is this opportunity to contribute to existing knowledge in the approach to workplace design which constitutes the point of departure for the NetWorkPlace™ study.

This thesis details the phenomenon, investigated through a case study approach, situated within a commercially functioning network enterprise in the form of a 'supply chain' of collaborative strategic partner organisations. The research project presents an opportunity to study a 'case of' interaction within and between, networked inter-organisational communities and to explore the influences of and the impacts on people, place, technology, and organisational structure.

Many people today spend more of their waking time in their offices, or 'being-at-work', wherever that may be, rather than in their homes (Mitchell, 1999). The processes of placemaking in organisations then present special opportunities for collaboration between professional place-makers, place-users, and place-owners. The designer's approach to placemaking must thus acknowledge the involvement and the legitimacy of every person's 'experience of living'.

Barrett, Kaya and Zeisel (2004) highlighted the communication gap which has existed between end users, designers, and owners. If that remains the case, it is impossible to be certain about what is regarded by each of the stakeholders in the workplace design process to be contextually relevant in the newly defined network context. How can designers and others come to know this? How is it possible to harness the collective knowledge and experience in order for this to become known? Who should be invited to 'play the game'? These uncertainties constitute some of the challenges that the NetWorkPlace™ study was forced to confront in the quest to provide an answer and an explanation to the over-arching research question which is outlined following.

## 1.2.0 Research Aim

The research aimed to develop an understanding of the networked organisational phenomenon through the NetWorkPlace™ case study. In so doing, the objective was to develop a way of interrogation to be utilised in this case and in future research opportunities, as well as being used in practical applications to inform the workplace design process within this context.

## 1.3.0 Research Question

As mentioned briefly already and further articulated throughout this thesis, the traditional corporate workplace has been characterised as hierarchically oriented and systemic in nature. The network context has introduced organisational forms which are fluid and dynamic in nature.

Over the past two decades there has been a shift in the development and refinement of workplace ideologies and typologies, reflecting a reconsideration of the experience of being-at-work. This has been restricted however to single organisational environments, nothing exists which specifically focuses on workplaces in a network context. A comprehensive literature review which by necessity, spans a number of traditional disciplinary boundaries, resulted in the identification and introduction of the NetWorkPlace™ phenomenon. This enabled the formulation of the guiding research question, thus providing the focus for the consequent investigation which is duly reported upon in and throughout this thesis. The research question is as stated following:

***What does the new context, created by the emergence of the knowledge economy and the network society, demand of the workplace design process ?***

### 1.3.1 Addressing the Question

To provide the cues to what was needed to be known, to the ways of knowing, and ultimately to the finding out, the initial NetWorkPlace™ study investigations deemed that due to the redefined context, it was necessary to transcend disciplinary boundaries and essential to allow the design problem to dictate the direction of the research. The problem of this research was conceived not as a 'how to do', but more as a 'what to do'. Understanding 'what to do' then became a progressive

sequence of methodological and process development in addressing the dilemma of 'how to do'.

Such an approach can be likened to the metaphor proposed by Krathwohl (1998: 227) who claimed that "if one wishes to understand the term *holy water*, one should not study the properties of the water, but rather the assumptions and beliefs of the people who use it. That is, holy water derives its meaning from those who attribute a special essence to it."

### **1.3.2 The Human Connection**

The NetWorkPlace™ study established that an understanding of the interactions and relationships between people, in and with the workplace, at the level of and through a perspective taken from within the network enterprise was required. This increases the capacity of architects and interior designers to create places which enrich the purpose and appreciation of the built environment in the new network context, for place-owners, place-managers, place-users, and designers themselves. Harnessing the additional knowledge that a trans-disciplinary approach provides, increases the possibility of creating built environments which may enhance both the experience of 'being' in the workplace as well as providing associated organisational benefits through a clear understanding of all of the contextual implications.

In order to achieve this outcome, the NetWorkPlace™ study shows that architectural research, and by extension architectural practice, must engage with what other disciplines have to offer. Collaboration with others is thus a basic tenet underlying the NetWorkPlace™ study. By considering human activity in relation to the full range of contextual factors and implications relevant to the case, design becomes a matter of facilitating experience. The NetWorkPlace™ study informs that process of facilitation. The 'human connection' then becomes a multi-dimensional concept as both a topic of research and the way of going about it.

### **1.4.0 Overview of the Thesis Structure and Content**

**Chapter 1** serves to introduce the reader to the NetWorkPlace™ phenomenon and to provide an indication of the journey that the study takes in this thesis.

**Chapter 2**, the literature review, builds a comprehensive image of the identified network context and the new organisational form which has come to be known as

the network enterprise. It also explores the substantive area of workplace design and identifies a gap in the current knowledge base. Together, these investigations lead to the establishment of the research question in order to explore the defined phenomenon.

**Chapter 3** establishes the methodological orientation and the methods employed in undertaking the investigation through the formulation of a robust approach which follows an abductively driven strategy.

**Chapter 4** describes the nature and details of the case study which enabled the operationalisation of a rigorous investigation to be undertaken. This was achieved through a commercially functioning network enterprise in the form of a supply chain of three collaborative strategic partner organisations. The study was comprised of two distinct components which enabled access to be gained to data through both a cross-sectional study at the scale of the whole of the network, and through a longitudinal study by focusing on a single discrete workplace site at the local scale.

**Chapter 5** documents the analysis phase of the study at the network scale, the scope of which is denoted as the 'network dimension'. This involves content analysis applied to interview transcripts of thirty-two (32) inter-organisational participants.

**Chapter 6** documents the analysis phase of the single workplace site investigation, denoted as the 'local dimension'. This follows an ethnomethodologically based approach involving fourteen (14) participants from the same organisation. It encompasses conversational analysis, non-participant observation, and the analysis of corporate documents.

**Chapter 7** contains a comprehensive discussion based on the integration of insights from both the network and local dimensions, providing a coherent argument and maintaining a consistent, yet developing theme throughout the narrative. The discussion draws on the philosophy of Bourdieu (1999) and applies the concepts of 'position' and 'positioning' in order to explain the power dynamics occurring at a number of levels within the network. These mirror the tensions created between the 'space of place' and the 'space of flows' in both practical and symbolic terms.

The thesis concludes with **Chapter 8** outlining the contribution to existing knowledge in the substantive area of workplace design. It also responds to the challenges of

what to do and how to do by consolidating the development of a methodology and a process which were generated throughout and by the study. This results in a capacity to 'inform' workplace design through the formulation of theoretical models and practical tools and techniques applicable in both the research and practice domains.

### **1.5.0 The NetWorkPlace™ Research Imperatives**

Haynes and Price (2004) suggested that despite the calls of some pioneers (Becker, 1990; Duffy, 1998, 2000), most workplace research has stuck within a narrow rationalist framework where hours saved or sheets of paper processed are seen as measures of productivity. They claimed that we need to undertake research which starts with a different underlying paradigm. Groat stated in *Architectural Research Methods*:

“Although I believe that there will always be a place for very focused research using the methods traditionally associated with particular subject areas (e.g., experimental research in technical areas), I also strongly believe that some of the most innovative research in architecture will be interdisciplinary, requiring atypical or unexpected combinations of methods”.  
(Groat & Wang, 2002: viii-ix)

She further suggested that if architecture as a field can be strengthened and enriched through research, then the power of architecture to enhance people's lives will be strengthened as well.

Wang's (Groat & Wang, 2002) opinions underline the importance of the relationship between architectural design and research. He noted that realisations which come from acts of inspiration may be different to the discovering that comes with research, arguing that research is valuable if we want to perform design in a more informed way. He concluded that “research and design are not incompatible” and that “contributing to a richer understanding of how design can enhance our stay on this earth ought to be a goal of any research in architecture” (Groat & Wang, 2002: 378).

Wang is convinced that “robust architectural research is hard to do unless we as architects engage with the research methods of disciplines that neighbour our field” (Groat & Wang, 2002: 379). It is suggested that precisely because of the fact that architecture encompasses many diverse elements, architects ignore the knowledge of other disciplines at their own peril. “An ever-increasing proportion of architectural practice involves unfamiliar circumstances beyond the experience of individual

practitioners, and beyond the conventional wisdom of the profession as a whole” (Groat & Wang, 2002: 8). No singular view can suffice, hence the methodological approach adopted for the NetWorkPlace™ study utilises more than one disciplinary perspective to illuminate the multiplicities that are present. Burgess (2000) suggested that such multiplicities are often overlooked or are invisible in every place and time.

“Once upon a time, ‘being interdisciplinary’ was not a problem for architects and architecture. To begin with, the idea of ‘interdisciplinary’ had not been invented. Vitruvius’s formula for the education of an architect included mastery in a wide range of fields: medicine, music, mathematics, philosophy, and so on” (Groat & Wang, 2002: 397). The emphasis now placed on specialisation in the modern world due to complex technologies, world-wide economies, and the knowledge explosion, dictates that no one profession or discipline can stand alone. The situation is exacerbated with a consideration of the social transformations which have occurred in parallel. It is no less true when it comes to the field of architectural inquiry and design. As a body of professionals in the service of humanity, architects must seek out knowledge provided by the different disciplinary areas and be prepared to integrate it with their own skills and expertise. Likewise, they must be forthright in contributing knowledge to other disciplines in a spirit of collaboration when called upon to work towards the common purpose that design encompasses.

Grimshaw and Cairns (2000) argued that a new research paradigm is emerging within the workplace design discipline. They suggested that if the leading edge of design practice is driven by demand from a business world in the midst of rapid change, then the production of knowledge via research to underpin practice must be closely tied to that of management research. Both Tranfield and Starkey (1998) and Senge (1997) support this view and argued that research and practice need to be integrated within the organisational context itself. The key feature of such a trans-disciplinary model is that research and practice are closely integrated and context specific. The need for an appreciation and acceptance of the role of research and the contribution it can make to workplace design in the re-configured context of the NetWorkPlace™ study is deemed to have been substantiated throughout this thesis. It follows then, that the generation of theory and practical design interventions are both possible and desirable outcomes.

“Architecture is operated by and for people, who have needs and desires, beliefs and aspirations ..... who do things, and whose activities have practical requirements; who see meaning and significance in the world around them. Such is no more than a reminder of the simple and basic conditions under which we all live, and within which architecture must operate.”

(Unwin, 1997, 16)

Based on a comprehensive and focused review of a broad selection of the relevant literature available, the following chapter sets the scene for the remainder of the study by establishing the context, the setting, and the phenomenon under investigation.



Chapter 1 INTRODUCTION

**Chapter 2 LITERATURE REVIEW:  
Setting the Scene.  
Part A: Establishing the Context and Setting.  
Part B: Establishing the Phenomenon.**

Chapter 3 METHODOLOGY

Chapter 4 CASE STUDY

Chapter 5 ANALYSIS – Network Dimension

Chapter 6 ANALYSIS – Local Dimension

Chapter 7 DISCUSSION

Chapter 8 CONCLUSION

## **Chapter 2      LITERATURE REVIEW: Setting the Scene.**

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### **2.1.0      Introduction – Logic of the Approach**

The introduction to this thesis provided through the overview in Chapter 1, highlighted the new context for workplace design which has emerged with the advent of the knowledge economy. Chapter 2 articulates this context in detail in 'Part A' through an exploration of available literature centered on the network society generally and the nature of contemporary corporate entities by adopting the supply chain model of commercial collaboration.

This sets the scene for the specific investigation of workplace design as the substantive focus of the research. 'Part B' of Chapter 2 explores the substantive area as a platform for the research into being-at-work in a functioning supply chain. The initial exploration enabled an evaluation of the most appropriate methodological framework (refer Chapter 3) within which to operationalise the actual case study (refer Chapter 4) and to undertake the empirical data and analysis phases which are subsequently outlined in detail (refer Chapter 5 and 6).

It is necessary to provide the depth and breadth of background information provided in Chapter 2 in order to substantiate the relevance of the research, to place the identified problem in context, and importantly to adequately inform a multi-disciplinary reader base. It was logical to do this as Parts A and B of the same chapter because although they comprise two distinct and separate subject areas, they are inextricably interwoven and inter-dependent as the NetWorkPlace™ study subsequently shows.

The approach adopted enabled the narrative component of the thesis to be argued in terms relative to the past, present, and future, together with a firm focus being maintained on the various disciplinary and stakeholder perspectives which were made apparent through the research process. The substantive contribution and the methodology ultimately developed to inform the workplace design process in the re-contextualised environment discussed, is consolidated as the outcome of the research in the concluding chapter of the thesis.

## **Part A      Establishing the Context and Setting**

### **2.2.0      Introduction – The World We Live In**

Globalisation has emerged at a furious pace over the past decade and now seems to affect almost everything connected with daily life. The term refers to a range of significant world changes encompassing social, cultural, political, religious, and economic issues. Castells (1996: 198) referred to globalisation as “the process by which human activity in its different dimensions becomes selectively and asymmetrically organized in interactive networks of performance that function on a planetary scale in real time.” It can be linked to two distinct phenomena, the information technology revolution and the major socio-economic restructuring of western society that began taking place in the mid 1970s (Castells, 1996; Giddens, 1999).

As the global marketplace and the knowledge economy expand into the twenty-first century, the amount of accompanying information appears also to be growing exponentially. Increasingly, economic value on a global level depends upon the trading of knowledge and information rather than the trading of material goods. Instantaneous global communication is now possible, at least in principle. This has changed an enormous amount about world society, about organisational capabilities, and consequently, a great deal about our personal lives too. The processes associated with globalisation invade and shape the ‘local’ contexts of life, a life which will be lived in what Castells (2000; 2004) termed the ‘network society’.

This has resulted in a dynamic world of hyper-competition, the pressure for companies to be innovative, the realignment of corporate activities, and the resulting re-invention of business, all now dominating organisational life. The creation of new knowledge, the effective capture of existing knowledge, and the efficient transfer or dissemination of this knowledge both internally and externally, are the characteristics which are permeating companies at the dawn of the new century (von Krogh et al., 2000; Tidd et al., 2001). Knowledge creation has been widely written about as the essential ingredient for organisations to achieve long term strategic success and to maintain competitive advantage (Quinn, 1992; Nonaka & Takeuchi, 1995; Postman, 1992). Management expert, Peter Drucker (1992; 1997; n.d.), warned that to remain competitive, maybe even to survive, businesses would have to convert themselves into organisations of knowledgeable specialists. He described this as a shift from the command-control model of Taylor’s scientific

management theory to one which is an information based organisation of knowledge specialists.

### **2.3.0 The Knowledge Economy**

What precisely does the knowledge economy imply? A generic definition can be adapted from the international Organisation for Economic and Co-operative Development's version can be stated as: an economy which is directly based upon the generation, distribution, and consumption of not just information, but also knowledge. Since the demise of the industrial age, economic activity has gradually shifted from the manufacturing sectors to be much more concentrated in the service sectors, relying on the generation and transfer of information and knowledge on a global scale.

Although manufacturing industries have not disappeared completely, there is a tendency world-wide for many of them to be technology intensive and dependent on the ability to quickly generate and transfer knowledge (Castells & Hall, 1994). Australia's involvement in this shift is evidenced in trends released by the Department of Industry, Science, and Resources (DISR, 1999), indicating growth in white-collar employment, a parallel and dramatic decrease in the availability of blue-collar work, and strong growth in the export of high-technology products from most of the world's developed countries. Indicators used to determine whether an economy is knowledge based have been suggested (Shoughten et al., 1999; DISR, 1999) as being:

- ❑ Production and employment related to knowledge based activities,
- ❑ Trade in knowledge and information products and services,
- ❑ The development of knowledge networks,
- ❑ The ability to make use of knowledge effectively, and
- ❑ Growth in research & development (R&D) and introduction of information and communication technology (ICT) innovation.

Amongst the work pioneered in the area of knowledge management, Blacker, Crump and McDonald (in von Krogh et al., 1998: 67) argued that "the thrust of much of the literature on knowledge.....suggests that embrained, encultured and encoded knowledge is of increasing significance to wealth creation." They further suggested that "knowledge is better analysed as an active, pragmatic process that is culturally situated, artefact mediated and socially distributed and which occurs within

communities of practice.” This indicates that to study the knowledge phenomenon in organisations, and the obvious extension of the workplaces required to support the activity, it is best done at the workplace site and within workplace communities themselves.

It has been argued (Ichijo et al. in von Krogh et al., 1998: 173) that “despite the growing interest in the management of knowledge in firms, there is a lack of clarity with respect to the micro-level process of how knowledge is enabled in firms.” This is still very much in the exploratory stage but the insights being realised are highlighting issues such as the management, social, and spatial implications as important for the future of organisations and in particular the need for a reconsideration of the places within which firms undertake their operations.

All of the available literature indicates that we are moving into a world where knowledge is one of the critical variables. McCampbell, Clare, and Gitters (1999: 79) in their study of the knowledge management phenomenon, stated that “clearly, knowledge management is the new challenge for the twenty-first century” and further, that “the new world of knowledge based business is characterized by a continuous redefinition of organizational goals, purposes, and an organization’s ‘way of doing things’.” The same study also pointed out that unlike information, knowledge is embedded in people and knowledge creation occurs in the process of social interaction. This was confirmed by Wiig (1999: 164) in his findings that “people and their behaviors contribute much more to the enterprise success than conventional assets.” Nonaka (1994) highlighted that the one sure source of competitive advantage is knowledge and that successful companies are those that consistently create new knowledge, disseminate it widely throughout the organisation, and quickly embody it in new technologies and products. Beijerse (1999: 94) stated that “our economy has evolved over the last couple of years from a managed economy into an entrepreneurial economy, more commonly referred to as a knowledge economy.....this macro level observation has implications at the micro level.” However, as Armistead (1999: 153) admitted, “we are only starting to try to understand what taking a knowledge perspective really means.” If it is the case that the management discipline is not adequately informed about the implications of the knowledge economy on organisational forms, then clearly the design disciplines have much to learn also.

### 2.3.1 Knowledge Management

There appears to be no single definition of knowledge upon which all scholars seem to agree. One thing is clear however, knowledge acquisition involves complex cognitive processes and the use of reasoning. For the purpose of this thesis, knowledge is taken to refer to the possession and understanding of information from which conclusions can be drawn, and having the ability to use this for a specific purpose. In comparison, information is deemed to be merely a collection of facts.

Management experts have suggested that knowledge is the most meaningful resource for an organisation in the new economy, above even the traditional resources of labour and capital (Drucker, 1993). It has become the dominant competitive tool for many organisations operating within a global marketplace (Brooking, 1999). It was suggested over a decade ago that many firms are unable to harness their knowledge resources due to organisational learning disabilities (Senge, 1990). The ability to learn and innovate, or in simple terms, to change with the times, is essential for survival. "The forces of technology, globalisation, and the emerging knowledge economy are creating a revolution that is forcing organisations to seek new ways to re-invent themselves" (Rowley, 1999: 416).

The creation of knowledge repositories, the improvement of knowledge acquisition, the management of knowledge as an asset, and the enhancement of the knowledge creating environment have all been mentioned as key issues for organisations to address (Davenport et al., 1998). Embracing knowledge management requires that attention be given to the objectives, the types of knowledge, the technologies, and the supporting roles, within and tailored to specific organisations. These aspects could also be expressed as the corporate aims; the governance regimes; the information needs; the social, technical, and infrastructure aspects of an organisation or network structure.

A definition based on the work of Davenport and Prusak (1998) indicates that knowledge management is concerned with the exploitation and development of knowledge assets with a view to furthering the organisations objectives. The knowledge to be managed includes both explicit documented knowledge and tacit subjective knowledge. This requires processes and systems associated with the creation, identification, and sharing of such knowledge. "Organisations that succeed in knowledge management are likely to view knowledge as an asset and to develop

organisational norms and values, which support the creation and sharing of knowledge” (Rowley, 1999: 418).

It must be noted however, that knowledge management in different organisations is likely to serve quite different and distinct organisational purposes. The knowledge economy has witnessed the introduction of business entities with quite different structural characteristics when compared to the traditional firm or organisation. Intermingled with traditional workers, a different type of workforce has also emerged. Lipnack and Stamps (1997) confirmed that the nature of work is changing dramatically and that ‘virtual teams’ are becoming increasingly more important as an organisational resource.

It is apparent that organisations will still be comprised of communities with their own specific social dynamics but the extended organisations of the knowledge economy, may well be comprised of communities with potentially different social dynamics. These will require new interpretations of ‘places’ and ‘spaces’ (permanent and temporary physical settings together with virtual venues) and the meanings that these take on will depend on the interactions within the various networks. This demands that built environments support both the social and technical aspects of the knowledge management function and for these to be tailored to each unique requirement.

### **2.3.2 Information in Society**

Within the knowledge economy, the term information society embodies the attributes of a specific form of social organisation in which knowledge and information generating, processing, and transmission become the fundamental sources of productivity. It is argued (Bullock & Trombley, 1999: 430) that the new information technologies, particularly the advent of the computer, have so transformed economic and social life that people in the advanced industrial world now live in societies, the main business of which is the production and distribution of information. Most workers are information workers, most products information products. Manufacturing activities have largely been exported to the less-developed parts of the world.

Theorists claim that the knowledge economy is simply one part of a broader pattern of ‘informationalisation’ that is transforming every aspect of social, cultural and political life. Work, education, family life, and politics are all responding to the

possibilities opened up by the enormous expansion in the quantity of information as well as the speed and subtlety of its processing. Home banking, home shopping, home education, home working, and vastly expanded home entertainment are all indices of the change.

Knowledge management theory is beginning to regard the level of information connection in organisations as an important part of the knowledge creation process and interaction in an office environment is seen as essential to enhance people's knowledge (Palmer & Richards, 2000). Modern organisations are increasingly being perceived and described as ecosystems in which tacit knowledge is developed and exchanged through conversations, formal and informal. Conversation, in the broad sense of an 'exchange of meaning' may even be the fundamental production process of the knowledge economy (Pascale et al., 2000). Kupritz (2002) found that workplace design was perceived by workers to be one of the main organisational factors in either the facilitation of, or as an impediment to the transfer of knowledge.

As implied in the definition of knowledge adopted for this thesis, information results from the processing of data. It provides the recipient with some understanding, insight, conclusion, decision, confirmation, or recommendation. The information may be a report, an analysis, data organised in a meaningful output, a verbal response, a graph, picture, or video (Davis, 2000). Knowledge is "information organised and processed to convey understanding, experience, accumulated learning, and expertise" (Davis, 2000: 71). It provides the basis for action and in the context of this study, action within a network. According to Bullock and Trombley (1999: 576), "a network comprises a field of social relations, understood as being made up of different elements linked through multiplex relationships and comprising both interactional and structural criteria".

#### **2.4.0 The Network Society**

One of the most prominent social theorists on the new age knowledge economy and its implications for society in general is Manuel Castells. The knowledge economy, characterised by an almost instantaneous flow and exchange of information, capital, and cultural communication is highlighted herein as a means of providing a macro-view of the overall context within which the micro-analysis of this thesis is situated. Castells (2000) concept of the 'network society' provided the societal framework within which the interpretations of participants in the NetWorkPlace™ study were



investigated although it was how the study 'members' viewed their 'local' situatedness in the world and constructed their own social order within this broader state of reality which was the primary focus.

Castells has been favourably compared to the other famous author of a multi-volume exposition of social and economic theory, Karl Marx, though it is not clear whether he is or whether Marx would have been happy about the comparison (Williams, 1997). The differentiation between the two appears to be that while Marxism emphasises the primacy of production in value creation, Castells confines himself to the realm of consumption (Williams, 1997).

Inspiration for *The Information Age: Economy, Society, and Culture*, published in a three volume series (Castells, 1996; 1997; 1998) and all since updated as later editions had been "generated by his [Castells] interest in the changing nature, and changed perceptions of the way society is organized and how individuals interact within it" (Williams, 1997: 52). He advocated that the new modes of information flow brought about by technology enablers are a crucial element in civilisational change. His research was reported by Williams (1997) as indicating that the application of information networks was leading to extreme flexibility in work, compartmentalisation of traditional social structures, and the trend towards increased social inequality and exclusion leading not to a 'global village' but what he termed as 'oligopoly'. Castells' philosophy adopts a 'whole of society', structuralist perspective but he also discusses how the implications which he raises impact on micro issues in urban planning, architecture, organisational entities, and in particular the workplaces within. It is these aspects which the underlying theoretical assumptions adopted in the treatment of this thesis are based.

#### **2.4.1 A New Social Structure**

Power, Castells (1997) argued, is no longer concentrated in institutions (the state), organisations (capitalist firms), or symbolic controllers (corporate media, churches). "It is diffused in global networks of wealth, power, information, and images, which circulate and transmute in a system of variable geometry and dematerialized geography. Yet it does not disappear. *Power still rules society, it still shapes, and dominates us*" (Castells, 1997: 359). Castells' philosophy, like that of Marx, is predicated on the existence of a capitalist society, but not one that is governed by 'the ruling class' although he does not deny the existence of a class structure. The

new power, he suggested, lies in the codes of information and in the images of representation around which societies organise their institutions, and people build their lives, and decide their behaviour.

This thesis acknowledges that within this broad framework, a number of other theories have been developed in an attempt to explain the changing structure of society. One of the most influential in recent times has been Florida's (2002) suggestion regarding the rise of the 'creative class'. This group is categorised as consisting of scientists, engineers, writers, artists, architects, designers, and knowledge workers; in fact anybody who uses creativity as a key factor in work or business. He (Florida, 2002) claimed that the increased presence of the creative class has and will continue to shape in deep and profound ways, shifts in the way people work, how and why they formulate their values and desires, and respond to the very fabric of everyday life.

It is not the objective of this thesis however to analyse society from a social theory perspective, but merely to provide a review which establishes an appropriate framework for undertaking the research in this case. Various views would no doubt result in varying interpretations. The network approach does not deny the existence of other influences, but it does establish a view of society which is underpinned by a specific set of contemporary social, economic, and commercial parameters which provide the boundaries for this research.

The new social structure of the information age, which Castells (1996) termed the 'network society', is made up of networks of production, consumption, power, and experience. Within this structure, productivity and competitiveness are the commanding processes of the economy. It is believed that productivity stems from innovation, whereas competitiveness is dependent on the capacity to be flexible. Thus firms, regions, countries, economic units of all kinds, are inclined to gear their production relationships to maximise innovation and flexibility. "Information technology, and the cultural capacity to use it, are essential in the performance of the new production function. In addition, a new kind of organization and management, aiming at simultaneous adaptability and coordination, becomes the basis for the most effective operating system, exemplified by ..... the network enterprise" (Castells, 2000a: 372).

Networks are not new structures of human practice but through the interconnection of individual nodes, powered by the information transfer capabilities of linked

technologies, they have taken on a totally new significance. A problem encountered with networks in the past has been the difficulty in coordinating functions and focusing resources. Current communication technologies have enabled the introduction of a new level of flexibility and adaptability in dealing with complexity. The coordination of decision making through decentralised horizontal communication systems, Castells (2001: 2) noted, "provide a superior organizational form for human action". An important point in this claim, is that pertaining to human action which is always directed towards a specific purpose and is, in some form, always context specific.

### **2.4.2 Social Networks**

Communication, in the context used here, refers to the transmission of (verbal, written and electronic) information between and among people in organisations. Du Brin (1974: 269) stated that "communication is the basic process by which everything between people happens in an organization." It has been argued by various authors (Cope, 2000; Nonaka et al., 2000; Egan, 1994) that there is often a large 'reality gap' between the information that is used to manage a company and the hidden information which could more appropriately be used if it was visible. They indicated that knowledge exists in two forms; surface knowledge which is apparent, shared and used in the public domain; and shadow knowledge which is hidden from view. These are also referred to as explicit and tacit knowledge. Further complications arise due to the varying value judgements often applied to information by individuals, dictating how it is used and who it is shared with.

The dilemma for both research and practice appears to be in finding what mechanisms can be employed to unlock this tacit knowledge for the benefit of both organisations and individuals. To manage knowledge effectively, commentators appear to agree that an environment which fosters trust in people and trust in processes must be established. This implies that the problem is one of organisational management, supported by a variety of organisational mechanisms, systems, processes, and infrastructure, including the built environment.

McDermott (2000) dealt with the problems of eliciting the hidden, tacit knowledge (the real gold) within organisations through the creation of 'communities of practice'. Noles (2000) took this concept a step further by suggesting that the key to unlocking this 'gold' is through the creation not only of communities of practice, but also in

encouraging the formation of informal 'communities of (common) interest'. Situations must be created where common communities can interact and form networks which build enthusiasm and trust. This was made quite clear in Koenig's (2000) study wherein he concluded that appropriate conditions, relative to both organisational culture and the physical environment, are considered to be fundamental prerequisites for the creation and dissemination of knowledge within organisations. The establishment of physical spaces where chatting and exchanging of ideas come naturally provide the opportunities where one person's 'by the way'! ..... or ..... 'did you hear'? ..... may be another person's serendipity.

The literature leaves no doubt as to the belief that real knowledge assets of an organisation reside within people. This is supported by Greco (1999) who termed this asset as 'knowledge capital'. Noted anthropologist, Dr Karen Stephenson (1998), described social networks as patterns of interactions that persist across organisations and cultures. The problem however is to make them visible. In order to understand how things really get done, Stephenson (2000) believes it is necessary to map the informal networks by which employees actually work with each other. Uncovering the naturally occurring social network for an organisation gives management the leverage they need to spark innovation and succeed.

Many companies confuse hierarchical structure with the social network, but Stephenson (1998) suggested that a hierarchical tool such as an organisation chart reflects procedural, not social knowledge, and that the two are completely different. De Lisser (1998) highlighted that over the past two decades, Stephenson has collected data on the social networks of more than 200 organisations. What she has discovered is that there are patterns of interaction within a company regardless of its industry, nationality or size. Smart managers she claimed, tune in to the invisible social network to send messages. They know where the hot points are on the network and who's connected to whom. Doherty (2000) and Kanter (n.d.) agreed that the ability to map the traditional corporate hierarchy with the new reality of internal culture networks, provides a road-map that 'target markets' internal knowledge.

The concept of social networks and the ability to facilitate their creation and maintenance has implications for the built environment and the physical infrastructure of organisations. Physical closeness, or 'propinquity' as Stephenson referred to it, is often critical to breaking down the normal barriers between 'tribes' such as experts and innovators within the organisation. In the distant past, networks

began as face-to-face encounters and conversations. That legacy continues today. Virtual-teams, tele-commuters, and employees who utilise hot-desking facilities represent a special challenge in today's organisations. It is necessary to create places and reasons for people to encounter each other. It appears that the ancient art of managing networks around the hearth is making a comeback precisely because of the challenges faced by working virtually (Stephenson, 2000a; 2000b). Unwin (1997) also made reference to the importance of the ancient hearth as a place for establishing relationships and face-to-face encounters. The challenge for designers is to understand what organisational members interpret as today's equivalent of the ancient hearth in terms of actual physical space or the symbols which supplement the lack of place.

### **2.4.3 The Network Enterprise**

Networks, referred to by Castells (2000) as the superior organisational forms for human action, have manifested in the world of business and commerce as the 'network enterprise'. These new forms of commercial entity are proliferating all domains of the economy and society, reportedly out-competing and out-performing vertically organised corporations and centralised bureaucracies. Castells (2000: 70) outlined the new 'technological paradigm' influencing societal and organisational roles. The characteristics of this are described as:

1. technologies which act on information (as distinct from information acting on technology as was the case in previous technological revolutions).
2. the pervasive effects of the new technologies (our individual and collective existence is being shaped by technology).
3. the networking logic (increasing complexity of interaction and socialisation patterns)
4. the flexibility (organisations and institutions can be modified by rearranging components).
5. the convergence of specific technologies into a highly integrated system (within which the trajectories of old, separate technologies becomes indistinguishable – all are now integrated into 'information' systems).

Network enterprises (epitomised by corporate collaborations, joint ventures, strategic alliances, partnerships, and supply chain optimisation) have transformed business management into networks of cooperation. This heralds the emergence of a new kind of socio-technical pattern of interaction between humans and

technology, enacted by the person to person networks established. It would be naive to assume that such new patterns of social interaction do not also require an assessment of the role played by the built environment. For the purpose of this research, the 'network enterprise' is defined as 'an agency of economic activity, built around specific business ventures which are enacted by interconnected organisations of various composition, size, and origin. Individual firms or organisations (or parts thereof) are linked to other discrete corporations by communication networks for the purpose of pursuing common business goals'. This results in the formulation of a new 'operational' entity. In practice, this could be comprised of as few as two or as many agencies ('nodes' in network terminology) as are required to cooperate for the venture concerned.

Whereas individual firms or corporations remain as the units of capital accumulation, asset management, property rights, and strategic management, the actual business function is performed by the 'network enterprise' through the communication between and cooperation of the various agencies comprising the network. An example of the gains to be made by individual firms engaging in a network enterprise collaboration is illustrated by the family owned Spanish company 'Zara', producer of moderately priced, ready-to-wear fashion garments. "In the 1980's, the pioneer of the networking model in the clothing industry, 'Benneton', had a design-production-distribution cycle of six months. It was overtaken by 'Gap' when the American firm cut the cycle to two months. Now, Zara does it in two weeks" (Castells, 2001: 74). This is the result of Zara engaging in a global networking process and has been achieved principally through the speed of information transfer between the network partners. This is also an excellent illustration of supply chain optimisation, whereby each member of the network makes gains for the benefit of the entire chain or network.

The 'bottom line' for a company's performance resides in its ability to generate adequate shareholder profit and/or satisfactory valuation in the financial markets. However it is the 'social capital' or 'labour factor' which remains as the source of productivity and innovation. The ability of workers and management to retrieve, process, manipulate, and apply information in business dealings lies at the core of an organisation's capacity to compete and succeed in today's markets. Some idea of the enormity of the information explosion confronting today's business community is illustrated in a study by Lyman and Varian of the University of California, who found that in 1999, there were "about 550 billion documents on the 'web' ..... and

the world's annual production of information in different forms amounts to 1.5 billion gigabytes" (Castells, 2001: 90). This phenomenal amount is no doubt increasing exponentially over time with the improvements facilitated by digital technology.

It logically follows then that computer literacy and appropriate information technology infrastructure are fundamental requirements for the functioning of network enterprises. Castells (2001: 124) notes that "overall, the body of evidence does not support the thesis that Internet use leads to lower social interaction and greater social isolation." The suggestion made by Mitchell (1999a) is that in fact the use of e-mail adds to, rather than substitutes for face-to-face and other forms of social interaction such as communication by telephone and letter. This would seem to support a proposition that the human need for physical propinquity in interaction has not yet been supplanted and it is logical to assume that this holds for both personal and business relationships. Certainly in a business context, interaction is more likely to be influenced by purpose rather than convenience. By extension then, without complementary physical environments which support social activities in the transfer and utilisation of information through the enablement of formal, casual, and serendipitous interaction in the workplace, business performance is unlikely to be optimised.

#### **2.4.4 Emerging Employment Patterns**

A 1999 University of California survey outlined by Castells (2001: 95) reported that "a representative sample of the Californian labor force, provided empirical evidence of the dwindling proportion of traditional employment patterns." The proportion of working-age Californians fulfilling conventional criteria was a mere 22 percent. Carney's (2000) observations based on European employment figures, revealed similar labor market indicators. Whilst no specific figures were available within the Australian sector for the same period, it is reasonable to assume that as a comparable Western trading economy with strong links to the above regions, similar trends to those of America and Europe would emerge.

"The value-making potential of organizations is highly dependent on the autonomy of informed labor to make decisions in real time" (Castells, 2000: 467). Traditional forms of disciplinary oriented management over labour do not appear to be compatible with the new production process systems implemented in contemporary organisations. Instead, skilled labour is now required to manage its own time in a

flexible manner, sometimes adding more time, and other times adjusting to flexible schedules, in some instances reducing working hours, and sometimes spending time working in different places. The combination of rapid electronic delivery with convenient time zone differences allows an effective new form of twenty four hour shift work. As Mitchell (1999: 102) explained, “CAD drafting can be undertaken by day in Manila for architectural and engineering design firms based in say London or New York, London film and video post-production houses can edit a days filming from Hollywood and have it back on the set by the start of the next day’s shoot.” With products that “retain a material component, the availability of digital networks opens up the possibility of radically decentralizing physical production – a surprising inversion of the taken-for-granted centralizing tendencies of the industrial revolution” (Mitchell, 1999: 103).

It has been suggested in much of the literature that flexible labour practices, variable employment patterns, and diverse working conditions characterise the new form of social structure emerging as a consequence of the network society. The study of social activities then, “has to be situated within the context of the transformation of patterns of sociability in our society, and ..... [within] the material supports of interaction: space, organizations, and communication technologies” (Castells, 2001: 125). These material supports comprise the critical components investigated in the NetWorkPlace™ study to provide the empirical evidence and justifications for the research undertaken and reported in this thesis.

#### **2.4.5 Workforce Mobility**

A new form of workforce mobility potential is sweeping the world, facilitated by information and telecommunications technologies. The biggest contributor to workplace flexibility appears, at least in terms of technology, to be associated with the introduction of wireless communication capabilities. This is occurring in tandem with economic and cultural shifts as evidenced in corporate down-sizing of the labor force, the emergence of virtual organisations, a fluctuating international economy, and an increased emphasis on quality of life considerations not only from the retiring ‘baby-boomers’, but also from both the ‘X’ and ‘Y’ generations. There is a growing segment of the population that is technologically proficient and inclined to experiment with new ways of working. Many employers are offering workers greater flexibility in the hours they commit to being-at-work.



Organisations are now more inclined to change their composition and structure in response to immediate market opportunities and project needs. There is a growing tendency to rely on a network of contract employees and other businesses, both of which depend primarily on technology for communication and the sharing of information. Until recently, the idea of virtual organisations sounded like cyberspace jargon unlikely to affect the daily lives of the majority of people. Most business professionals now however, fully understand the concept even if they have no direct participation in such an organisation, at least not yet. Some aspects of virtual operation are fast becoming a reality for many organisations in the new economy.

In parallel with this technological phenomenon, personal and cultural values are becoming increasingly important in how people are choosing to work and live (Clark, 1996). These values and needs, interaction and familiarity with others, being 'connected' to a physical place in a way that technology cannot accommodate, are all qualities that can be supported by the physical workplace environment. This is an important social condition because apparently, whether they themselves realise it or not, many workers have come to rely on the office as a significant, perhaps even their primary place to engage in social interaction. "Connection through cyberspace does not relieve the need for people to be involved in some form of more tangible community" (Caruthers & Heath, 2001: 51).

All of the indications of major change occurring in workplace settings is tempered somewhat by many who still believe however, that the vast majority of the workforce will continue to be based in offices that must be visited frequently, if not on a daily basis (Clark, 1996). The predictions by technocrats of a totally changed society, working from home in 'electronic cottages' surrounded by a new kind of human settlement, with traditional workplaces disappearing and homes becoming the centre of multi-functional activity, have not materialised to any great degree. The reality is, that many of those workers operating electronically from home still need to commute to their offices on a regular basis. The mode of working which has become more common, sees many professionals now spending much of their time in the field with clients and business partners, and/or travelling across the country and around the world. The consequence of this trend is that in many workplaces, individual desk assignment is being significantly reduced with space allocation consigned to workers on an as-needed basis.

The influential Dean of the School of Architecture and Planning at MIT, Bill Mitchell (1999), provided an insightful commentary on the development of the mobile workforce when he wrote that:

“this does not mean that the majority of us will become full-time, stay-at-home telecommuters, and that traditional workplaces – particularly downtown offices – will simply disappear. Despite decades of interest in the possibility of telecommuting, there is little evidence that it will take over to such an extent. But we will certainly see increasingly flexible work schedules and spatial patterns, and many people will divide their time, in varying proportions, among traditional types of workplaces, *ad hoc* work settings that serve while they are on the road, and electronically equipped home workplaces.”

(Mitchell, 1999: 72)

Four years on, Mitchell’s predictions were being realised as he reported on the then current situation:

“Electronic commerce is not, as it turns out, the replacement of bricks and mortar by servers and telecommunications, but the sophisticated integration of digital networks with physical supply chains. Increasingly, we are living our lives at the points where electronic information flows, mobile bodies, and physical places intersect in particularly useful and engaging ways. These points are becoming the occasions for a characteristic new architecture of the twenty-first century.”

(Mitchell, 2003: 3)

The current picture is perhaps best captured by Castells (2001: 234) comments made half a decade ago when he said:

“The emerging model of work is not the home tele-worker, but the nomadic worker and the ‘office-on-the-run’..... The overwhelming majority of people do have workplaces to which they go regularly. But many also work from home (not instead of, but in addition to, their usual workplace), they work from their cars, trains, and planes, from their airports and their hotels, on their vacations and in the night.”

(Castells, 2001: 234)

This has produced a society where ‘work’ activities are performed in a multitude of locations. The technology revolution has permitted activities and locations to be ‘networked’ together, theoretically, with uninterrupted communication or connectivity. This ushers in a new concept of space, a space made up of communication nodes and information flows, a space which requires redefinition of boundaries and clarification of interfaces.

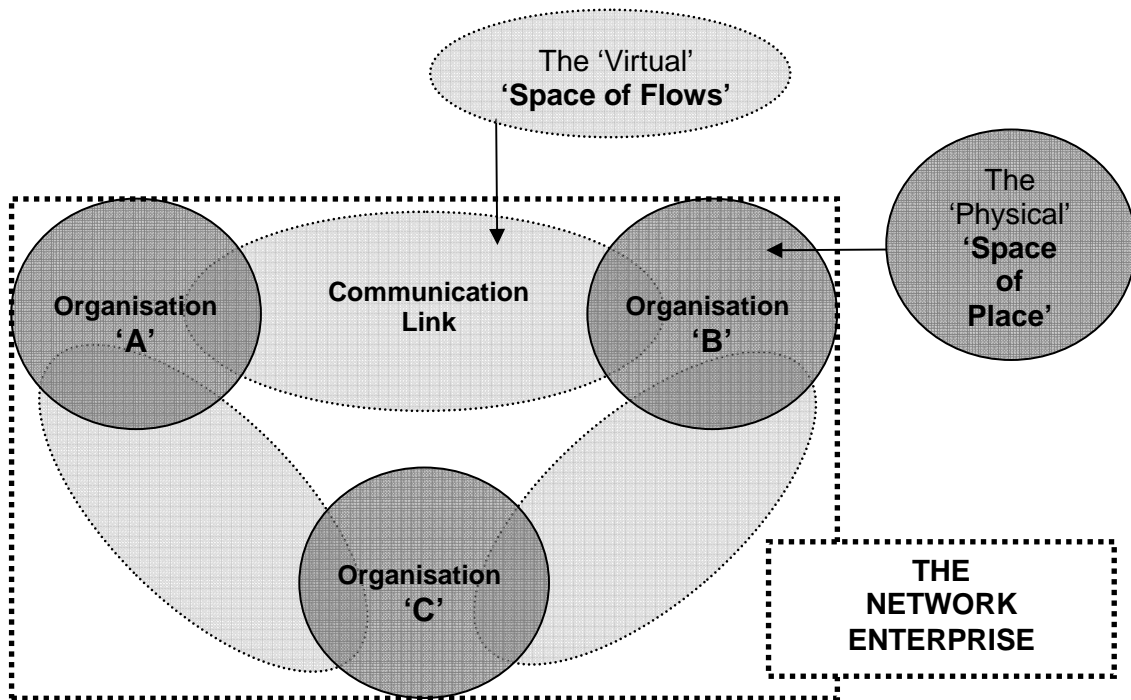
## **2.5.0 A Redefined Concept of Space**

With the internet revolution has come a new concept of space and distance, one that is made up of networks of inter-connected nodes. The information flows which

are processed through the inter-connections are generated and managed from physical places. These places are inhabited by people. “From an architects viewpoint, these electronically mediated places are not uniform, dimensionless nodes, as they rather misleadingly appear on the abstract network diagrams made by telecommunications engineers” (Mitchell, 1999: 31). They each have characteristics of spatial extension, particular physical contexts, and relevance to people. They are inhabited and used by people who have their own local customs and cultures. The complementarity between physical space and the value adding capacity of new technologies, combined with the politics, business strategies, cultural values, and social interaction within organisations has the potential to produce a rich diversity of contemporary ‘places’.

Workplaces have become physical spaces that support social activity which has been enhanced by new technologies. The additional layers of communication provided for means that the social dynamic will potentially operate in different ways. In broad terms, the architecture and dynamics of the network provide the sources of meaning and function for each ‘place’. Castells (2001: 207) noted that “the resulting space of flows is a new form of space, characteristic of the information age, but it is not place-less, it links places by telecommunicated computer networks ..... It redefines distance but does not cancel geography”. Gustavo Cardoso (in Castells, 2001: 131) claimed “we are in the presence of a new notion of space, where physical and virtual influence each other”. Both physical place and cyber space now act as the material support of sociability. “This will redefine the intellectual and professional agenda of architects, urban designers, ..... and others who care about the spaces and places in which we spend our daily lives” (Mitchell, 1999: 7).

Network structures have created a duality of space. What has emerged for workplace designers is the need to consider both the ‘space of place’ and the ‘space of flows’ (Castells, 2001). (Mitchell and others commonly refer to these as ‘physical place’ and ‘virtual place’, however for the sake of consistency throughout the narrative of this thesis, Castells’ terminology of ‘place’ and ‘flows’ has been adopted.) An interpretation of the relationships between the concepts of the ‘space of place’ and the ‘space of flows’ is modelled in the diagram following (refer Fig. 2.1) for illustrative purposes only. In the case of the network enterprise, ‘space of place’ is contained principally within the physical boundaries of individual organisations but ‘places’ external to an organisation may also be part of the network operations. The virtual ‘space of flows’ can occur both between and within individual organisations.



**Fig. 2.1 Modelling of 'place' and 'flows'**

### **2.5.1 Spatial Logic**

What has become a critical influence in the new expression of social organisation is a shift from the spatial boundaries of physicality to the spatial network community as the source of sociability. A useful working definition of community which encompasses the notion of physical place and cyberspace was proposed by Barry Wellman (in Castells, 2001: 127) in stating that "communities are networks of interpersonal ties that provide sociability, support, information, a sense of belonging, and social identity." Both Castells (2001) and Wellman (1997) maintained that workplace situations and by extension, workplace spaces and their connections play an important role in constructing sociability.

Time and space are socially determined, fundamental dimensions of human experience. Both of these have been transformed by the technological revolution. From a social theory perspective, place is the material support of time sharing social practices which encompasses simultaneity. This was traditionally provided by territorial contiguity. "Social practices can now be simultaneous without being physically contiguous .....this is the space of flows" (Castells, 1996: 200). What has emerged is a new spatial logic, embodied in a new organisation of power, contained within the 'space of flows'.

Lunenfeld (1999) discussed ways in which the new medium of the world wide web is replacing place by reconfiguring the body's social and architectural contexts. It is suggested that the web is the first serious contender designed to do some of the things that architecture has always done, that is, to create places to do things in, places to see, and places to be seen in. Until recently, real estate had no real competition, there was no alternative to going to 'places' to do particular things. People went to work, went home, went shopping, went to visit friends, went to conferences, or just went out. Now all these things and much more can be done without going anywhere, at least not to any physical place. It can all occur through flows in the electronic realm of cyberspace.

Cyberspace and its associated concepts were introduced to the world in William Gibson's (1984) science-fiction novel *Neuromancer* and in the mid-1990's it was defined in the Merriam-Webster Dictionary as "the on-line world of computer networks" (Heim, 1999: 25). It was originally envisaged as the imaginary space where computer simulations occur, but is now used more generally for the 'place' where the electronic network links a global community of users (Bullock & Trombley, 1999). Although contemporary usage often makes it indistinguishable from the internet, the emphasis is on an intangible arena which Castells (2001) refers to as the 'space of flows'. In computing terms, virtual reality generally involves the creation of a three-dimensional simulated world, which may be a simplified version of the real world or an imaginary construct.

The term is now commonly used in organisational and business contexts to refer to the concept of virtual meetings or tele-conferencing. This is achieved by linking participants, located in different physical places, through the use of audio-visual equipment in real time. This connects the physical 'space of places' through the virtual 'space of flows'.

E-commerce simply refers to the practice of conducting business over computer networks, making it possible to do so anywhere in the world at any time. This mode of business interaction implies dealings between anonymous participants, but may also include business transactions within established personal relationships.

Mitchell (1999a: 127) has suggested that cyberspace is nothing but countless billions of bytes stored at the nodes of a worldwide computer network, but that at the user interface, "it reinvents the body, architecture, and the complex relationship of the two that we call inhabitation." He concluded that the power of physical 'place'

will still prevail and claimed that “physical settings and virtual venues will function interdependently and will mostly complement each other within transformed patterns of urban life rather than substitute within existing ones. Sometimes we will use networks to avoid going places. But sometimes, we will go places to network” (Mitchell, 1999: 155).

The space of flows is built on a network of electronic circuits. These connect certain functions which are concentrated spatially in physical places. The ‘space of place’ and the ‘space of flows’ are therefore mutually dependent on each other. Castells (1996; 2000) argued that “we are moving toward a form of social organization expressed through this spatial process, in which the power of flows is substituting for the usual centers of power”. By this he is implying that power is embodied in the information and knowledge which is processed and transferred through the ‘space of flows’.

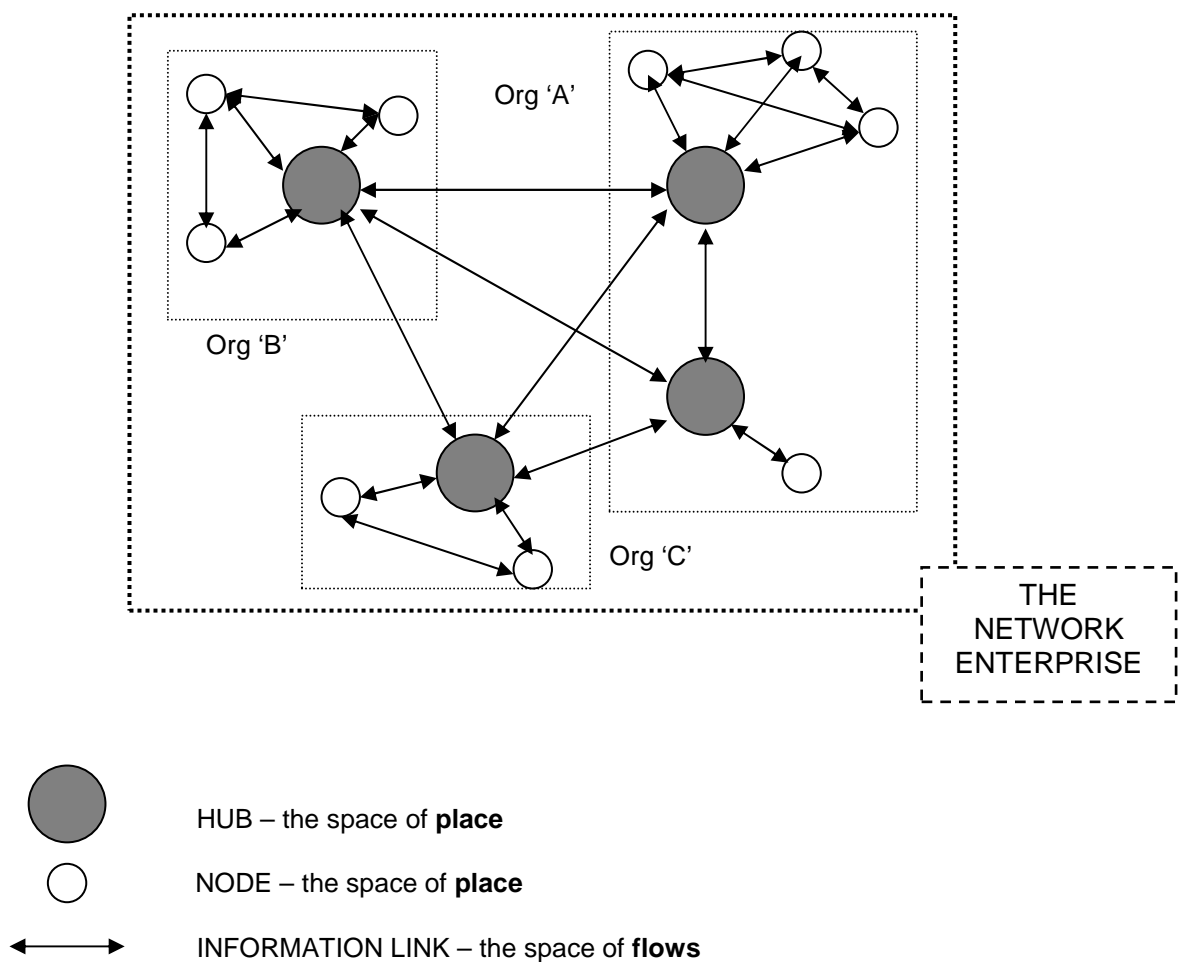
In the context of commerce and businesses then, based on Castells’ theory, what is important today is not the corporations themselves which have existed independently for a long time, but rather that these same organisations are linked together in groups of companies through networks or alliances to create specific products or services. The link between Siemens, Toshiba, and IBM who collaborate to produce a particular telecommunication device, is just one of countless examples of this principal in action. In such a scenario, it is the connection between all the units in the network that takes on particular significance.

But as we are reminded (Castells, 1996; 2000; Mitchell, 1999; 2003), this is not the only logic of space with which we are confronted. Physical places with their human inhabitants and embedded cultures do still exist. The dialectics between the ‘space of flows’ which organises power, and the ‘space of place’ which facilitates experience, is at the centre of the process of transformation involving corporate entities.

If ‘place’ is the material support of time sharing face-to-face social practices, then the ‘space of flows’ is the material organisation of time sharing social practices that work through the electronic transfer of information. This abstract concept can be better understood by describing the three layers of material supports (refer Table 2.1) that together constitute the ‘space of flows’. Table 2.1 has been adapted from Castells’ (2000: 442-445) work as a summary of his extended explanations.

The essence of Castells' ideas provides a sound theoretical explanation of the contextual framework within which this thesis is situated. It is proposed from Castells' theory that socio-spatial forms and processes influence and are influenced by the dynamics of the overall social structure within the network. Workplace design in the context described must then embody a social perspective, and thus space cannot be defined without reference to social practices within organisations and inter-organisational networks.

The diagram following (refer Fig. 2.2) illustrates the potential for multiple interactions within a network enterprise.



**Fig. 2.2 Generic Representation of Linkages within a Network Enterprise Model**

**Table 2.1      Layers of Material Support for the ‘Space of Flows’**

<p><b>The first layer</b> is constituted by a circuit of electronic exchanges.</p> <p>In the network, no place exists by itself. .... Thus, the network of communication is the fundamental spatial configuration. .... Places do not disappear, but their logic and their meaning become absorbed in the network. .... The technological infrastructure that builds up the network defines the new space, much like the railways defined ‘economic regions’ and ‘national markets’ in the industrial economy.</p>
<p><b>The second layer</b> is constituted by its nodes and hubs.</p> <p>The ‘space of flows’ is not placeless, although its structural logic is. The electronic network connects specific places with defined social, cultural, physical and functional characteristics.</p> <p>Hubs are defined as communication exchangers, playing a coordination role for the smooth interaction of all the elements integrated into the network.</p> <p>Nodes are defined as strategically important functions that build a series of locality based activities and organisations around a key function in the network.</p> <p>Hubs and nodes are hierarchically organised according to their relative importance or influence in the network. The functions to be fulfilled by each network define the characteristics of places that become the privileged nodes and hubs. Each network defines its sites (places) according to the functions and hierarchy of each site, and to the characteristics of the product or service to be processed in the network. Castells cites the narcotics production industry as an example. Rauen (2001) proposes that nodes must also construct a recognisable, perhaps even a symbolic set of architectural / social / cultural / commercial places that keep them linked to their greater networked identity. She contends that the ‘space of flows’ describes the forms and processes that support (potentially global) movement of information, capital, and control, and that enable a new decentralised socio-economic structure to exist.</p>
<p><b>The third layer</b> refers to the spatial organisation of the dominant managerial elites who exercise the directional functions around which such space is articulated.</p> <p>Castells claims this to be the dominant spatial logic because it is the spatial logic of the dominant interests/functions in our society. But such domination is not purely structural. It is enacted, indeed conceived, decided, and implemented by social actors.</p> <p>Castells proposes the hypothesis that the space of flows is made up of personal micro-networks that project their interests in functional macro-networks throughout the global set of interactions in the space of flows. That is, the elites (managers) form their own society, and constitute symbolically secluded communities. This is adequately illustrated by the business talk and decisions which occur over a restaurant luncheon or golf game.</p> <p>Workers constitute a different sub-culture who are clustered in segregated, generally spatially bound communities.</p> <p>In each of these instances, there are distinct forms of cultural connectedness. One of the premises essential to Castells (2000) theory on globalisation is that space is not a reflection of society, but an expression of society. More specifically, the social practices that organise the forces of production and the interests of the dominant classes also organise the realisation of built space in everyday life (Rauen, 2001).</p>



Prior to the work undertaken in this thesis, the consequence of these new spatial concepts for design in general and workplaces in particular were yet to be adequately investigated. It was not clear what might constitute either the direct or the indirect implications, nor what this meant for physical environments and social interaction. One way to address this, Castells (1996: 204) posited, “is the development of an architecture ..... that incorporates the debates, the values, the moving cultural dynamics of society into spatial forms.” The challenge for architecture in this current age is to coordinate Castells’ logic of power with the logic of experience, or in spatial terms, the ‘space of flows’ with the ‘space of place’. The articulation of spatial forms and processes to bridge the dichotomy between power and experience appear to be the fundamental tasks facing the design professions.

Why should we care about this new kind of architectural design issue? It matters, Mitchell (1996: 5) suggested, “because the emerging ..... spatial arrangements of the digital era will profoundly affect ..... the forms of cultural activity, the enactment of power, and the experiences that give shape and texture to our daily routines.....The worldwide computer network – the electronic agora – subverts, displaces, and radically redefines our notions of gathering place”. It will play, he claimed, “as crucial a role in twenty-first century urbanity as the centrally located, spatially bounded, architecturally celebrated agora did in the life of the Greek polis” (Mitchell, 1996: 8). This notion is equally applicable to the workplace which has traditionally been the spatially bounded location where employees gather to ‘do work’.

There are further suggestions that we have, or at least are in the process of reinventing our ideas about the human habitat. “Today, as telepresence augments and sometimes substitutes for physical presence, and as more and more business and social interactions shift into cyberspace, we are finding that accessibility depends even less on propinquity, and community has come increasingly unglued from geography. Our network connections are becoming as important to us as our bodily locations” (Mitchell, 1996: 166). How then does our understanding of community also fit a concept where space is no longer necessarily reliant on physical contiguity for its construction? New global forms of space, and by extension presumably new forms of community, can exist outside and beyond physical localities thanks to the ubiquitous linkages provided by networked telecommunications. How does this manifest in the workplace context?

## 2.5.2 The Nature of Network Communities

Community has been defined in various fields as being based on such things as geographic location, social norms, or types of social interaction common to a particular group. For the purpose of the NetWorkPlace™ study, the following definition was adopted as the most appropriate to describe collectively, the members of the networked organisations. Community refers to a multi-dimensional, cohesive social grouping that includes in varying degrees: shared spatial relations, social conventions, a sense of membership and boundaries, and an ongoing rhythm of social interaction (Mynatt et al., 1997). It is acknowledged that a number of smaller communities may be present within the larger, all encompassing community that is the network entity. It is further acknowledged that network communities may also embody a unique collection of characteristics that distinguish them from each other and from more traditional forms.

What is important for network communities and in the case of this study, workplace communities, is the role that technology plays in overcoming spatial distancing. Network communities rely on relatively immediate computer network communications to span distance in order to support the frequency and intensity of interaction (a social rhythm) necessary for relationship building and maintenance. What is of specific interest in the NetWorkPlace™ study in regard to socio-spatial arrangements concerns both formal and informal relationships. What is the relative balance required between 'face-to-face' conversation, 'hallway' meetings and greetings, and 'distant' interaction facilitated by technology? Can design bridge the division created by the dialectics of social distancing and what are appropriate interfaces between the 'space of place' and the 'space of flows'.

Virtual communities do not follow the same patterns of communication and interaction as physically bounded communities. They do nonetheless generate interpersonal social networks, characterised by reciprocity and supported by the dynamics of sustained interaction. Cyber-links, in an inter-organisational context, may in fact facilitate the forging of more, and even stronger ties between members than would have been possible prior to the advent of modern electronic communication, simply because of the ease of initiating a connection and the potential for regular contact. It is far too simplistic however to think of on-line meeting places as direct substitutes for physical ones. Instead they should be treated as useful additions to the architect's repertoire of design options, having

strengths and weaknesses that suit them to certain purposes but not others. If connection is restricted to virtual or electronic mediums, reliance cannot be placed on repeated face-to-face contact to establish the trust on which social, intellectual, and commercial life depends (Mitchell, 1999).

The emphasis on interaction 'between' places breaks up the idea of traditional spatial patterns of behaviour into a fluid network of exchanges supported by communication through the 'space of flows'. In the electronically connected workplaces of the twenty-first century, Mitchell (1999) posed some challenging questions about how people will choose between face-to-face interaction and being connected through telecommunication devices. "When will you want to travel to meetings, and when will you happily substitute remote connection? When will you communicate synchronously, and when will you decide to do so asynchronously? And how will our individual choices add up? What aggregate spatial and temporal patterns will emerge?" (Mitchell, 1999: 129). He postulated that we will plot our actions and allocate our resources within what he refers to as the framework of a 'new economy of presence'. "In conducting our daily transactions, we will find ourselves constantly considering the benefits of the different grades of presence that are now available to us, and weighing these against the costs" (Mitchell, 1999: 129). Of course this is not a new concept, the economy of presence has structured daily life in the past. However, telecommunications infrastructure is now introducing new possibilities and radically restructuring the comparative benefits and costs at our disposal.

Prior to the introduction of the digital era and the widespread use of new communication technologies wherein cyberspace is an accepted 'meeting place', it was taken for granted that all forms of community required some sort of articulation of a persistent sense of location. This has traditionally been resolved by physical proximity. It remains to be seen what metaphors of spatial proximity will be required by the members who are required to operate through virtual environments, even if only for part of their time at work. This may require an exploration of the notion of connected virtual places and the management of the associated physical spaces. It has been pointed out (Mynatt et al., 1997) that as users inhabit both 'real' and 'virtual' spaces, network communities require a complicated management of markers that link elements (i.e. people, environment, objects, and actions) of these two spaces. These dimensions stress the need for coherence between 'real' and 'virtual' worlds as well as the challenges of migrating social practices.

### 2.5.3 Space and Social Organisation

Spatial boundaries, in the physical sense, have previously supported and defined social interactions and the development of social networks. The notions of a 'space of place' and a 'space of flows' have introduced significantly different dimensions into the conception of spatial boundaries. In the past, designers have used space and physical layout to help both shape and reinforce social groups and conventions. One of the significant benefits of spatial layouts and spatial metaphors within the workplace has been their use to help people cross organisational boundaries or work more effectively within them. The implication for spatial design, whether for networked communities or otherwise, is that both the physical (real) and on-line (virtual) spaces must fit the social activities, the social conventions, and the expectations of the user communities.

Amongst the major design dimensions of network communities is the sense of a persistent environment that frames the presence of multiple actors and provides mutual awareness. The shared space of a network community offers the potential for verbal and non-verbal communication at all times, but the space does not exist only when explicit communication is taking place. It is there, even when participants are quiet or absent. People inhabit both the real world physical spaces and the on-line virtual spaces simultaneously. Networked communities require support mechanisms and management of spatial relations to successfully integrate the real and virtual. This is due to the fact that social interaction and activity occurs within real and across virtual domains.

"Seemingly unconstrained by temporal or spatial limits, the rapid and continuing emergence of internet based technologies, networks, and services brings with it entirely new dimensions of electronically mediated experience and communication" (Horan, 2000: 5). People in advanced and traditional societies alike have in the past perceived their space as place-based. Castells (2000: 453) offered the definition of 'place' as "a locale whose form, function, and meaning are self-contained within the boundaries of physical contiguity". It is as yet unclear whether the historically rooted spatial organisation of common experience, the 'space of place', is in a state of tension or harmony with the 'space of flows', the dominant manifestation of power and function. What this means in terms of social relationships and the balance required between 'place' and 'flows', is the matter of empirical investigation undertaken in the NetWorkPlace™ study and reported upon in this thesis.

Contemplating the design of organisational workplaces introduces a central focus on the subject groups or communities. The idyllic nature of a community as a tightly bounded, spatially defined, culturally supportive group has been expanded through the possibilities of network connections. Castells (2000) reported that 'virtual communities' do not have to be opposed to 'physical communities', they are just communities in a different form, socialising in a different medium of communication. They each have their own specific rules and dynamics.

This concept is as applicable to organisational communities as it is to society as a whole. What is unique to today's workplace communities is that they exist and operate within a global economy that is based on flows of information and organised around "command and control centers able to coordinate, innovate, and manage the international activities of networks of firms" (Castells, 2000: 409).

There has been some suggestion (Horan, 2000) that the ability to communicate with anyone from almost anywhere, introduces a perception that we are nowhere in particular, simply dislocated agents not really connected to any person or place. Cognitive researchers and anthropologists alike, agree that a sense of place is a necessary physical anchoring feature that also serves as a hub for real-time personal exchange. Horan (2000: 16) claimed that "as the global village fast becomes reality for many of us, one of our greatest challenges will be to forge strong, parallel links with the enduring qualities of local, physical community".

A challenge for the NetWorkPlace™ study has been to understand how the increasing use of digital technologies affects the perception and use of physical place for both network communities and individuals within organisations, and what relevance this has for network managers and workplace designers. Chesbrough and Teece (1996) suggested a decade ago that the claimed virtues of being virtual, may have been over-sold. The exploration of a functioning network enterprise such as is elaborated upon through the NetWorkPlace™ study has enabled empirical data to be collected for a specific case. Together with a robust analysis process, this thesis reveals an explicit view of the contemporary knowledge economy context in action.

## **2.6.0 The Network Enterprise in Action**

Economic activity has long been divided into the production of goods and services and their distribution to the final consumers. The value chain has emerged to unite

them in an optimal performing end-to-end schema, characterised by coordination and interaction among parties governed by the balancing of supply and demand through the marketplace. The concept of the supply chain is neither new nor revolutionary, but the burgeoning trend towards inter-organisational collaboration and the development of communication channels through e-business technology have provided new directions and commercial opportunities. This is changing the ways that businesses operate and the ways that employees interact. The workplace, and consequently workplace designers must respond to new challenges presented by the network enterprise in equally innovative ways.

The model of inter-organisational collaboration adopted for the empirical investigation phase of this research is comprised of a contemporary, commercially functioning supply chain (refer Chapter 4). It is necessary then to provide an overview of the relevant supply chain literature available in order to situate the research within its broader context. This enables a clear understanding of the characteristics and nuances associated with the operational aspects of this particular collaborative model to be achieved through recent supply chain research reporting.

### **2.6.1 Inter-Organisational Cooperation**

“Within the organization literature, there has been increasing recognition of the prevalence and importance of collaborative linkages across organizations, both informal and formal” (Newell & Swan, 2000: 1288). Networking with others is seen to be crucial for the development of new products, new processes, and innovation. Inter-organisational alliances have become increasingly important in the strategies through which corporations and firms of all sizes attempt to secure competitive advantages (Maloni & Benton, 2000). The success of these inter-organisational networks (IONs), including supply chains, depends on voluntary cooperation in order to realise the benefits from partnering arrangements (Burt et al., 2003; Sahay, 2003; Das & Teng, 1997; 1998). Supply chain management has been moving from purchasers and suppliers attempting to meet their needs separately, towards integrating goals, activities, and processes across the whole supply chain network (Gossain, 2002; Handfield, 2002; Zheng et al., 2000; Zanfei, 1994).

In the past, companies have focused primarily on achieving manufacturing and quality improvements within the confines of their own organisation; now their efforts

extend beyond those boundaries to encompass the entire supply chain within which they operate. Responses to the effects of globalisation, restructuring of industries, deregulation, and the emergence of dynamic competitive markets are some of the significant influences driving this trend (Weber et al., 2000; Reddy & Reddy, 2001; Christopher, 1998). Most of the gains achievable from an internal focus have been realised through a preoccupation with down-sizing, operational rationalisation, and other cost-cutting measures undertaken in the late 1980's and throughout the 1990's. The opportunities that exist through inter-organisational cooperation and collaboration represent the new frontier in the quest to achieve competitive advantage. Supply chains can thus be considered to represent a practical embodiment of the 'network logic' applied to business activity and organisational interaction, that is, the network enterprise in action.

### **2.6.2 Supply Chain Management**

Various definitions of a supply chain have been offered in the literature. They have been identified as consisting of the network of organisations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services to the ultimate customers (Lummus et al., 2001; Mentzer et al., 2001; Cox et al., 1995; Christopher, 1992). The Supply Chain Council (SCC) established in 1997, uses the definition that the supply chain encompasses every effort involved in producing and delivering a final product, from the supplier's supplier to the customer's customer. The term supply chain refers to the entire network of companies that work together to design, produce, deliver, and maintain products and services. The supply chain concept applies equally to activities in either product or service oriented industries.

Research on supply chain management (SCM) has focused most recently on a debate regarding the need for closer relationships between businesses in the search for competitive advantage (Kolluru & Meredith, 2001). There is a growing emphasis in modern supply chain literature on the importance of forming collaborative strategic partnerships with select trading partners. In parallel with this, there has been an increase in the acceptance of electronic mediums for process integration through the exchange of business information between supply chain partners (Lee et al., 1998). Supply Chain Management (SCM) has become a commonly used term, representing very much an opposite view to the functional perspective traditionally studied in logistics where purchasing, supply, manufacturing, and selling are separated functions (Bask, 2001).

The concept of supply chain management, as defined by Ellram and Cooper (1993), is an integrating philosophy to manage the total flow of a distribution channel from supplier to ultimate customer. Monczka and Morgan (1997) stated that integrated supply chain management is about managing all the processes that are needed to provide the customer with value in a horizontal way. They believe that supply chains, not companies, compete and that those who will be the strongest competitors are those that can provide management and leadership to the fully integrated supply chain, including external customers as well as prime suppliers, their suppliers, and their suppliers' suppliers. Integrated supply chain management coordinates and integrates all activities into a seamless process. It links all of the partners in the chain including departments within individual organisations, together with the external partners in the chain.

A key point in supply chain management is that the entire process must be viewed as one system. It becomes critical for companies to manage the entire network of supply to optimise overall performance. Organisations have realised that whenever a company deals with another company that performs the next phase of the supply chain, both stand to benefit from the other's success. Maximising performance of one department or function may lead to less than optimal performance for the whole company, resulting in a need to now look across the entire supply chain to gauge the impact of decisions in any one area. The literature on workplace innovation reveals that much has been written on the alleged benefits but much less on the obstacles, the costs, and the associated risks (Balkin et al., 2001; Beard et al., 2000; Duffy, 1998; 2000).

### **2.6.3 Optimising Supply Chains**

The history of the supply chain initiative can be traced to early beginnings in the textile industry with the quick response program and later to efficient consumer response in the grocery industry. More recently a variety of companies across many industries have begun looking at the entire supply chain process (Lummus & Vokurka, 1999). Several industry collaborative groups have integrated to form the Supply Chain Council (SCC) which was established in the United States and has grown from 73 member organisations in 1997, to now consist of over 770 members comprised of some of the world's largest manufacturers. The SCC was developed to research aspects of supply chain management in order to provide practitioners



with guidelines for best practices in supply chain design and accelerate the implementations of these practices.

The competitive importance of linking an organisation's supply chain strategy to its overall business strategy is now being realised. Supply chain management is not a stand-alone process. It requires network integration, collaboration, and cooperation. Better managing the supply chain involves linking supply chain strategies to the overall organisational business strategy. By linking supply chain objectives to company strategy, decisions can be made between competing demands in the supply chain. Improvements in performance are driven by externally based targets rather than by internal department objectives.

Managing the supply chain means managing across traditional functional areas in the company and managing interactions external to the company with both suppliers and customers. This cross-boundary nature of management supports incorporating supply chain goals and capabilities in the strategic plan of the company. This focus on integration can then lead to using the supply chain to obtain a sustainable competitive advantage over competitors. By tying the supply chain strategy to the overall company strategy, the objectives become process objectives rather than functional objectives.

Lessons learned from case study projects show the significance of synchronising decisions and their impacts 'within' and 'between' functions of the member organisations. It has been indicated that cross-functional teams are an important means of achieving results in a supply chain with the added emphasis that synchronisation of effort must fit the need of all functions (Kumar & Crook, 2001). Reciprocal sharing of information with suppliers and customers results in improvements such as reduction of total costs, reduced inventory holdings, and improved delivery times (Parker, 2000; Beckett et al., 2000). It is necessary to consider each one of the value-adding processes in all of the organisations responsible as part of a value stream dedicated to the final consumer's requirements. In adopting this coordinated approach, a truly lean enterprise can be created (Womack & Jones, 1994). "In order to make improvements in the supply chain, a clear sense of openness, honesty and interdependence must exist between the different company members ..... it is essential to empower internal cross-functional teams in each company" (Hines et al., 1998: 20).

#### 2.6.4 Horizontal Integration

Successful SCM involves horizontal, cross-functional integration both within and across organisational boundaries. This entails giving away control, moving away from traditional hierarchies, and developing inter-organisational relationships which require trust and collaboration (van Hoek, 2001). Because networks are not governed by traditional hierarchical relationships, Newell and Swan (2000) suggested that this new context is faced with critical problems surrounding the development and maintenance of trust and the deployment of power amongst members. They further claimed that trust is the key to effective networking involving the creation and diffusion of knowledge.

Collaboration between organisations in the past has generally been confined to specific projects with formalised relationships, clearly defined roles, and definitive start and end dates. The business to business collaboration of contemporary SCM demands on-going cooperation in fluid environments, requiring the establishment and maintenance of trusting relationships between partners to ensure reliable and accurate information flows (Heikkila, 2002). Compared with open markets and single organisational hierarchies, inter-organisational alliances such as supply chains are distinctive in their reliance on voluntary cooperation to achieve outcomes (Das & Teng, 1998; Alter & Hage, 1993; Larson, 1992) but it has been generally acknowledged that the governance structure(s) directing the network relationships directly affect the ability of a supply chain to perform (Whipple et al., 1999).

It has been argued that time utilisation has become one of the most effective competitive weapons available to organisations (Stalk & Hout, 1990). Companies have found that reducing and continually improving cycle times positively impacts on many other areas within the organisation such as inventory policies and workforce attitudes (Womack & Jones, 1994). New technology is facilitating the transfer of information in 'real-time' to provide the potential to drastically reduce cycle times. However, it is claimed that "the current information flow in the vast majority of supply chains is still far from ideal" (Mason-Jones & Towill, 1998: 98). It appears as though many information strategies have involved far too much bias towards the technology used with little consideration, if any, having been given to the social and associated supporting aspects of information transfer and application. This issue has particular relevance for the physical environment when considered in relation to concepts outlined previously as the 'space of place' and the 'space of flows'.

Information flow and product flow are the two essential components, and in combination, make up the total supply chain (refer Chapter 4). The flow of information activates the product pipeline. The essential competitive benefit of marketplace data usage by each player in the supply chain has been likened to everyone in the orchestra playing from the same sheet music (Sabath, 1995).

However, sharing information is only simple in theory, both technical and cultural factors often intervene and create impediments to effective sharing processes. Addressing inter- and intra-organisational issues related to the social system appears to be a possible way of breaking down some of the enculturated barriers to information sharing. The interplay and inter-relationship of variables which support or inhibit the ability of the social system to function within the supply chain has not been investigated to any great extent prior to this study.

In an increasingly global marketplace, most companies are competing with relatively similar machines, technology, and expertise. Each player in the supply chain is dependent on the patronage of the end consumer, so no matter how far upstream a player resides, satisfying the customer at the marketplace should be the key to their strategy. The performance of the whole supply chain is crucial, a bad link can critically affect all members of the chain. Hence, companies need to work together and optimise the complete pipeline by establishing a seamless supply chain (i.e. think and act as one entity) to maximise their market share.

Based on this argument, it seems that only with the support of the holistic chain approach can further significant and radical improvements in individual business performance be realised. The enablement of social processes and interaction, supported by appropriate spatial strategies implemented throughout the supply chain, may provide a key to such innovation.

### **2.6.5 The Social Linkages**

Perhaps the critical notion to grasp concerning SCM is that it has a significant human dimension. The SCM way of thinking places an important emphasis on communication and cooperation across all parties comprising the chain and includes both inter- and intra-organisational focus. "The central doctrine of SCM is that each component of a supply chain must perform effectively, both individually and as a system, for it to be successful" (Tracey & Smith-Doerflein, 2001: 99). Everyone must work together to make the supply chain efficient and this team approach must

permeate every level of the organisations involved. “Managing linkages through the intelligent use of information technology (IT) has been considered an important aspect of SCM from its beginning. IT enables the synchronization of value activities – even when physical locations are geographically far apart – and it helps to create relationships and interrelationships that strengthen the supply chain” (Tracey & Smith-Doerflein, 2001: 100). For many organisations, the focus on being ‘part’ of a supply chain is creating a new workplace where many old ideas and assumptions are no longer valid.

As the concept of work changes, so too is there a need to think about the environments required to support the changes. Selecting and effectively utilising the appropriate infrastructure, enhancing individual effectiveness, creating value through collaboration, and generating organisational flexibility are critical to success. For each of these elements, there is a complementary approach in architectural design. The design discipline, through the application of new knowledge and fresh philosophies, seems capable of addressing the human-environment dimension of SCM in a positive, proactive manner.

Organisational proficiency is dependent on the abilities of the individual members who stand at the interface of the company and its partners, or at interfaces between the company’s sub-units. Supply chain synchronisation is as dependent on the people and the supporting mechanisms or infrastructure involved, as it is on the processes and technology utilised. This involves creating organisations where new and expansive patterns of thinking and ‘being’ are encouraged and people are continually learning collectively (Bessant et al., 2003). Many organisations have now, as part of their strategic visioning, included a focus wherein the workplace is seen as a ‘learning environment’.

For architects and designers to respond to this demand, there is a need for them to consciously embrace “a philosophy that incorporates an awareness that people actually perform across three domains: the cognitive, where skills are used to collect and comprehend information; the psychomotor, which concerns controlling the body in order to perform tasks; and the affective, which relates to the skills used to recognize, understand and respond to feelings and behaviors”. (Tracey & Smith-Doerflein, 2001: 101).

Many organisations operate within inappropriate, unwieldy structures which bear no relation to the needs of the marketplace, the idiosyncrasies of customers, or their

own internal capacity to deliver. There appear to be two fundamental weaknesses in traditional supply chain thinking related to human behaviour and the social system.

The first is “the dependence upon achieving and sustaining significant behavioural change, not only internally, within one organization, but also within the suppliers and customers of that organization” (Gattorna et al., 1992: 10) and secondly, “the belief that it is possible to create and maintain a shared vision and strategy for adoption by all members of the chain” (Gattorna et al., 1992: 11). Together, these create a significant social challenge for an architectural response to ‘network’ design.

Supply chain management is about optimising the overall activities of companies working together to manage and coordinate the whole chain. Strategic alignment is crucial for organisations seeking to improve agile responsiveness within supply chains in rapidly changing markets. The ‘shared alignment theory’ and ‘strategic alignment model’ jointly offered by a number of researchers, claims to provide a framework which aligns organisations to the commercial environment in which they operate (Chorn, 1991; Gattorna et al., 1992; Gattorna & Walters, 1996). McAdam and Brown (2001: 84) interpreted strategic alignment theory to hold that “the performance of an organization is enhanced by achieving alignment between four elements or dimensions which determine its success”. These were noted as the competitive situation of the market; the organisation’s strategy; culture; and leadership style.

Human behaviour is the common factor in each of these elements. Gattorna (1998) emphasised the need to understand the nature of relationships and the evaluation of relative dependency and mutual benefit within such a strategic alignment framework. By extension, architecture, through its responsibility in both the social and spatial dimensions of the workplace, has the capacity to contribute to the success of these elements through the role of helping to create the ‘places’ in which human behaviour is enacted.

### **2.6.6 The Notion of Virtual Teams**

With the increasing emphasis placed on effective collaboration, within single organisations and also with business partners in inter-organisational alliances, interest in team working has expanded to embrace the emergence of virtual teams transcending distance, time zones, and organisational boundaries (Kezsbom, 2000).

Virtual teams in the context of this thesis are geographically dispersed groups of people linked together by a common purpose and by computer and telecommunication technologies, without which they may not be able to work together (Hajzak, 1998). They have emerged in response to the increasing interdependence between organisations and are enabled through the development of inter-organisational information technology systems.

To assist with comprehension of the group dynamics encountered in the NetWorkPlace™ study, it was considered pertinent to include some of the important characteristics and issues associated with virtual teams as noted generally in the literature (refer Table 2.2).

**Table 2.2 Characteristics of Virtual Team-Working**

1.	Communication in virtual teams is more likely to be asynchronous. This hinders the conveyance of cues, delays feedback, and interruptions or long pauses in communication often occur. In an asynchronous discussion, the norm is for many topics to be active at the same time, with team members making contributions at different times, possibly even on different topics.
2.	Information overload may reduce the synergy between team members if there are no links among the responses and long time lapses between communication events can lead to discontinuous and seemingly disjointed discussions (Montoya-Weiss et al., 2001).
3.	Relative to more traditional settings, communication processes that occur in virtual contexts are expected to be rapid, customised, temporary, greater in volume, and more formal (Prather, 1995). This affects the ability to manage conflict and problems of team functioning due to the limited opportunities for informal or ad hoc interaction and the complexities and subtleties of dealing with widely different personalities, cultures, and possibly even languages make communication far more difficult among virtual team members (Montoya-Weiss et al., 2001; Solomon, 2001).
4.	While it is true of all teams that job demands focus attention primarily on task achievement, virtual teams may have fewer opportunities for learning because reflective time is less available (Clutterbuck, 2002), and virtual teams may be prone to trust that is fragile, temporary, or non-existent (Jarvenpaa, 1998).
5.	Because virtual teams are distributed and share business processes, risk can migrate between members, making risk identification and mitigation difficult (Bell & Kozlowski, 2002).
6.	Where virtual team members work for different organisations or even different divisions within an organisation, capturing maximum mindshare of team members becomes difficult and the lack of a common identity may cause different cultures to send confusing or contradictory messages to members (Anonymous, 2002).
7.	Traditional bureaucratic organisations are structured to protect and control information, but while virtual team membership exposes individuals to new sources of knowledge and creates opportunities for innovation (Glinert, 2004), virtual team memory may be compromised through fluid membership and changing relationships, making such teams vulnerable to loss of organisational learning.
8.	Team members may lack a sense of belonging both within the team and within the larger organisation, characterised by the feeling that they have to work with each other and that they have authority and responsibility for dealing with certain work issues but little influence in managing their own issues and processes (Shockley-Zalabak, 2002).

The extended notion of virtual teams has no doubt been inspired by the widespread adoption and promotion of non-virtual teams within organisations. The topic of team-working has received extensive coverage in the management literature and thus is not elaborated upon to any great degree in this thesis.

Within the physical boundaries of traditional workplace environments, non-virtual teams operate more or less in the same space and time, that is, synchronously. In synchronous interaction, verbal and non-verbal cues help regulate the flow of conversation, facilitate turn taking, provide immediate feedback, and convey subtle meanings. Without the benefit of face-to-face interaction, this is clearly not achievable and is the case often encountered in the network context.

### **2.6.7 The Research Trend in Supply Chain Management**

The development of supply chain management (SCM) to date, despite the enormous amount of literature on the topic, appears to have been largely driven by practitioner involvement (Voss et al., 2002). The further theoretical development of SCM clearly requires broader philosophical and methodological perspectives to be adopted, beyond a restrictive, purely commercial focus (Naslund, 2002; Voss et al., 2002; New, 1997). This would also potentiate a better understanding of the complexity of network structures and interactions and provide a clearer picture of the context with which contemporary designers are confronted and are in fact themselves embedded.

Supply chain management research has been stated as “simply the most practically and intellectually significant theme within current managerial and economic research” (New, 1997: 15). The concern however has been the problem of defining the conceptual boundaries of supply chain management as a field of study. The approach proposed by Fine and Leopold (1993: 22) was based on what they termed “systems of provision” which requires understanding each commodity or commodity group “in terms of a unity of economic and social processes which vary significantly from one commodity to another.”

This means that consumption as a sociological and economic phenomenon, needs to be understood in terms of the mechanisms and structures which enable it. New (1997: 18) claimed that “innovations in the supply chain are themselves social artefacts which convey particular meanings, ideologies and justifications; understanding how and why these arise are just as much a valid arena for research

as the detail of techniques and developments themselves.” He went on to further claim that “it is impossible to understand one aspect fully without the other ..... this contextualization allows the explication of the ethical, political and social aspects of the supply chain idea” (New, 1997: 18).

Interest in supply chain management has increased exponentially over recent years (Ho et al., 2002). Research into the topic however has been described as fragmented and usually focused in narrow functional areas (Burgess et al., 2004). A positivist approach appears to be prevalent and transaction cost economics and competitive advantage theories dominate. Across the SCM area there seems to be little consensus and often no disclosure about either the ontological or epistemological underpinnings of the research. Much of the information is restricted to narrow functional silos in areas such as logistics, marketing, and information technology applications (Skjoett-Larsen, 1999).

### **2.6.8 The Domain of Many Disciplines**

It has been noted that the development of the new discipline of supply chain management is based in many cases on the usage of concepts, definitions, theories, rules, and principles from other disciplines, with sources ranging from anthropology, sociology, computing, economics, philosophy, political science, and psychology (Sachan & Datta, 2005). There is a noticeable absence of any mention in regard to the architectural design discipline or any other of the built environment areas.

This provides in part, some justification for undertaking the NetWorkPlace™ study in providing the design disciplines with an opportunity to contribute to an understanding of the mechanisms and processes which support SCM. At the same time, an investigation of the role of space and place will help to inform the design process in the new networked context.

The whole concept of “supply chain management has been poorly defined and there is a high degree of variability in people’s minds about what is meant” (Kathawala & Abdou, 2003: 141). It is claimed that logistics research, and by extension supply chain management, is interdisciplinary by definition. It draws upon many other scientific traditions and has been heavily influenced by “economic and behavioural approaches ..... mainly through the business disciplines of marketing and management, but also borrowing from engineering” (Gyongyi & Spens, 2005:132).



The significant aspect of logistics research has been the almost overwhelming dominance of positivist frameworks (Naslund, 2002; Mentzer & Kahn, 1995). The most recent literature claims however that there is now a decrease in reliance on the positivist paradigm and an increase in more interpretivist approaches utilising direct observation methods in case study contexts, together with a trend towards providing multi-dimensional insights into research problems (Sachan & Datta, 2005). The utilisation of interpretivist methods appears to be influenced by the goal of wanting to understand a particular phenomenon with findings being both time and context specific.

A random sample of 100 recent SCM related journal articles (Burgess et al., 2004) failed to reveal even one instance where the physical workplace was specifically mentioned. 'Space' and 'place', much less the concept of 'flows', do not appear to be on the radar screens of the majority of network managers or those involved in supply chain research. The NetWorkPlace™© interviews undertaken (refer Chapter 5) reinforced this observation, with the majority of participants being unable to engage in any meaningful discourse about 'space' or 'place' in those terms. Many instances of claims that 'place' is important were unable to be further articulated by the majority of respondents. This might indicate that design is either seen as being of little importance; that the benefits of physical workplace design are neither understood nor appreciated; or that the spatial policies and controls implemented within the subject organisations provide little scope for involvement; and thus the issue is simply not in the consciousness of those outside of the designer's realm. The overall interview data (refer Chapters 5 & 6) however is considered to be rich in examples of both management and operational issues related to 'place' and the redefined dimensions of space previously discussed. The job of this research has been to make those connections explicit and understandable.

New and Payne (1995) argued that research in supply chain management is best suited to a methodological pluralist approach which adopts the views of multiple disciplinary perspectives. The supply chain concept provides a living example of the network enterprise, and given the obvious paucity of research in this domain which considers the role of design and the built environment, a 'point of departure' is reached. The opportunity to investigate Castells' concepts of the 'space of place' and the 'space of flows' through a case of networked interaction is thus presented and provides the context and the specific setting within which the NetWorkPlace™© study and subsequently this thesis are located.

## **Part B      Establishing the Phenomenon**

### **2.7.0      Introduction – The Challenge**

There is a lack of evidence to support the existence of a holistic theoretical basis for understanding either the role of or the contribution that workplace design can provide to organisations operating in the network context, and in particular, organisations collaborating in contemporary supply chain arrangements. In addition, there is an absence of formal frameworks and approaches which designers can utilise in order to comprehend the nature and complexities presented by the network enterprise context. These realisations emerged as the most significant challenges for the NetWorkPlace™ study to confront.

The changing face of the corporate landscape has affected both the nature of organisations and the people who comprise their membership. Technological innovations and global commerce have prompted a radical re-ordering of organisational relationships and in many cases, the associated structures and processes. Workplace design for yesterday's mechanistic, bureaucratic organisations operating in a relatively stable environment was based on the development of static solutions. This was generally informed by an articulation of the management's aims for the facility and an understanding of the organisation's hierarchical structure and division of labour.

To design for today's adaptive, often organic organisations in a dynamic business environment requires a comprehensive analysis of the organisational structure and its relationships. This must include the individuals within those, and both the physical setting and technological infrastructure which support them, as a total system of inter-related parts (Green & Jack, 2004).

#### **2.7.1      The New Workplace Condition**

The argument for flexible office spaces was well established over fifteen years ago with Becker (1990) and Duffy (1990; 1992; 1993) being the most noted pioneers. On one hand, the importance of connectivity and flexibility in office buildings is claimed to have increased during recent years due to the rapid changes taking place in both public and private organisations, resulting in the implementation of innovative workplace design solutions (Arge, 2005; Young, 2004; van der Voordt, 2004). On the other hand, open-plan offices and flexible designs are not totally new

innovations and assessment of their impact still remains a contentious issue (Haynes & Price, 2004; Lupton & Haynes, 2000; Vischer, 1999). Olson (2002) has even argued for a return to private enclosed offices.

Despite anthropological-like 'caves and commons' suggested by Hurst (1995), the ecological metaphors proposed by Becker and Steele (1995), and the flexible spaces symbolised by Duffy's (1997) 'cells, hives, dens, and clubs' in the early innovative workplace literature, the debate largely is still focused on the 'open-plan' versus the 'cellular space' and the 'private office' (Haynes & Price, 2004). The issues associated with organisational culture foreseen by Becker (1990) remain under-appreciated (Horgen et al., 1999). Managerial attitudes are seen by those who have succeeded or failed with flexibility initiatives as the single most common determinant of the outcome (Lupton & Haynes, 2000).

Duffy (2000) himself claimed that the changes he and others anticipated have not been realised. He attributes the failure to conservatism and to lingering Taylorism associated with hierarchical cultures in organisations, and to a cost-cutting focus on the part of both managers and design professionals.

Cairns and Beech (1999), whilst taking care not to deny that any of the proposed concepts in relation to flexible working may be valid and applicable, highlighted the advocacy bias in many of the arguments put forward on the subject. It is not an uncommon phenomenon as new management tools gain popularity in organisational discourse, that they attract proponents whose self-interests are served by the continued spread of a particular agenda or argument in the same way that fashions appear and disappear (Abrahamson, 1996). What is common with many such self-replicating managerial fashions is that empirical evidence to support the arguments is hard to find. It seems that similarly, despite well publicised 'stories' about successes and failures, rigorous academic evidence in relation to the impact of the physical workplace on organisational performance remains both elusive and unconvincing.

The role of physical properties of the work setting in bringing about improved organisational performance in terms of management effectiveness and increased productivity has been noted by authors such as Leaman and Bordass (2000). "Nevertheless, a pattern of relationships between work, workers and the characteristics of work settings is not well understood" (Ilozer et al., 2002: 61). Ilozer's (2002) study was undertaken in Sydney between 1998 and 2000 and

investigated organisational performance relative to the 'innovativeness' of open plan work settings. The aim of the study was to determine whether organisational performance and hence, change, are indeed brought about by innovative work settings. A sample of 102 work sites was studied. For the purposes of the study, work settings were considered to be 'innovative' in terms of their ability to facilitate appropriate physical environmental conditions, task performance, and staff interaction. The findings showed that to some extent, the proposition that the physical properties and design of the workplace can influence organisational performance was validated.

Corporate real estate is increasingly being recognised as an important factor in the cost of doing business and management is now seemingly paying more attention to such assets. It is apparent however, that factors such as capacity benchmarks which focus on maximisation of space usage rather than optimisation of space utilisation continue to drive management strategies (Stoy & Kytzia, 2005). It has been suggested that spatial configuration in physical office design is now more readily accepted as a method which can be relied upon to influence interaction and movement (Steen et al., 2005).

Since modern organisations can be described as arenas for networking where people interact in different ways, a dynamic view of their resources and particularly the workplace, have become more important than ever before. Lindahl (2004) suggested that organisations live by their informal structures which are based on the day-to-day activities and tasks, and problem-solving and learning situations.

The way people physically interact and where they do it, that is the workspace, have thus become essential to organisational performance. Four aspects to help ascertain in what way a workplace can become the supportive and innovative resource an organisation needs to perform well have been identified by Lindahl (2004). These are listed as:

1. Work environment qualities that have to do with health and safety.
2. The metaphoric and symbolic qualities of space depicting characteristics such as corporate image and status.
3. The dynamic and contextual interdependence between the spatial setting and the everyday actions carried out in the organisation.
4. The quality and degree of participation in the process of design.

Except for the health and safety issues (indicated as 1 above) which are considered to be well covered by legislative requirements in the design process, the remaining three are encompassed within the scope of the NetWorkPlace™ study and figure prominently in this thesis either explicitly or by implication.

## **2.8.0 Workplace Design**

An evaluation of workplace design and its contribution to the achievement of corporate goals and objectives depends it would seem upon who may be considering it, at what time in history, from what perspective, and within what parameters. This thesis documents an analysis of the current situation in organisational workplaces through the undertaking of a case study investigation into what is now required to 'inform the workplace design process' for the knowledge economy in a network context.

A brief overview of the evolution of workplace design throughout the last century highlights the influence of and alignment with social, technological, and managerial trends of the various eras. Such comparison of the past with the present facilitates a better understanding of both the contemporary and potential future needs of organisations and the people within them.

### **2.8.1 Evolution of Office Design**

Much of the historical information contained in this section was sourced from and is thus attributed to Andrew Laing's *New patterns of work: the design of the office* (in Worthington, 1997: 23-38). The table provided (refer Table 2.3) is intended as a frame of reference to give some indication of the evolution of office trends over approximately the past one hundred years. These trends can be linked to parallel social movements and associated organisational implications which occurred through both the industrial and the computer revolutions of the past, together with the revolution in knowledge and information currently being experienced.

As the twenty-first century gains momentum, Duffy's (1997) spatial typologies appear to have been embraced by organisations and designers alike. Many of the contemporary designs appearing in architectural publications are direct applications of Duffy's concepts, often marginally reinterpreted and labelled differently by a range of designers internationally.

**Table 2.3 Office Design over the past 100 years**

<b>Early Twentieth Century Influences.</b>
Advancement in building techniques and services technology in the late 19th and early 20th centuries saw the emergence of the high-rise building. Civic development in North America at the time ensured that the high rise form became an established part of the city landscape. This form of building also responded well to the dominant management philosophy of the period, Frederick Taylor's Scientific Management Theory. Taylorism is renowned for its treatment of people merely as 'units of production'. This management concept led to a de-humanisation of the workplace and the introduction of 'time and motion' studies as a means of ensuring the office became another efficient production line. There are many well known examples of architecture (e.g. Frank Lloyd Wright's Larkin Building) serving this management philosophy, characterised by hierarchical order, over-bearing supervision, and de-personalisation of the environment which fitted well with the early 'modernist movement'. A classic example of employees being 'put in their place' both physically and metaphorically.
<b>The 1950s.</b>
The early 1950s witnessed a change in attitudes towards management styles and office processes. These were much more about the routine processing of paper based information. This form of office layout earned the title of 'paper factory' because of the many similarities with traditional factory layouts.
<b>The 1960s.</b>
The 1960s saw the development of a concept developed in Germany known as Burolandschaft (landscaped office). This was an open plan concept responding to a management style that demanded office layouts which better supported defined working and communication patterns. The logic followed a clustering of work groups whilst maintaining visual access within the groups. A similar approach was adapted in North America in the late 1960s as 'office landscaping'. Uniform and standardised open planned areas characterised this style with the additional introduction of some common shared facilities. Management levels inhabited private offices separated from the main work areas. The physical format reinforced the hierarchically differentiated management system of the era.
<b>The 1970s.</b>
A strong reaction against the open plan concepts of the previous era emerged during the 1970s. There was a growing concern within organisational cultures regarding privacy, environmental control, and personal identity. The complex requirements of users demanding a variety of spatial arrangements began to be recognised. This ushered in a rigorous 'space planning' regime based on self regulating structural grids and a heavy reliance on the arrangement of furniture to define spaces.
<b>The 1980s.</b>
During the 1980s came the introduction of the personal computer into organisational systems and office environments. This heralded an era wherein office design was centred around the dual requirements of the new computer technology and the emerging importance of managerial and professional work in offices. During this time, the international design consultancy, DEGW Inc, undertook the ORBIT (Office Research on Buildings and Information Technology) Studies in Britain which concluded that IT demanded a radical rethinking of the use, servicing, and base building design required for office accommodation (Worthington, 1992). The introduction of new information technology into the office environment raised the initial and still strongly debated questions about how office space could be used to adapt to different ways of working.
<b>The 1990s.</b>
A brief period in the late 1980s and early 1990s, driven by the economic rationalism movement, saw organisations respond with the implementation of stringent cost-cutting strategies. This manifested most visibly in the office layouts known as the universal (one size fits all) approach which gave birth to the 'Dilbert' comic-strip legend. This was a topical form of social comment perpetuated by media journalists but most definitely reflecting a common social opinion. The period served to emphasise the need for a variety of different spaces to suit different work types and user requirements. In parallel with these influences, a growing realisation by management of the value of social capital as an organisational asset was emerging. This is also generally acknowledged as the period in which the pre-eminence of the 'knowledge worker' began to be recognised in organisational and management theory.

## 2.8.2 Emergent Trends

It has been claimed that two principal drivers have emerged in workplace design which has made it now much more about enabling business dynamics than about crafting office aesthetics (Henderson, 1998; Drucker, 1997). These are described as the hyper-competitive business climate and the move from an industrial-based economy to a knowledge-based economy. These influences call not only for different types of workers but have resulted in fundamentally different types of organisations. The design industry appears to have responded by moving from the typical static office design solutions of the 'universal style' to one of creating 'strategic management environments', based on a multi-disciplinary approach to support dynamic organisational performance (Turner & Meyerson, 1998; Raymond & Cunliffe, 1997).

Perhaps the most influential contemporary practitioner in the field of workplace design, Dr Francis Duffy (2000) argued that cost cutting seems, at least to an outsider, to have become the predominant objective in corporate operations throughout the nineties. Rationalisation was reduced to the crudest form of cost reduction suggested Duffy (2000), perhaps because of the attraction of easy to apply, but far from comprehensive, indices of the efficiency rather than the more subtle and less direct measures of the effectiveness and the relevance of space use. The emphasis on cost cutting was no doubt an outcome of the economic history of the last two and a half decades and this impression is reflected in the design of many offices.

Robertson (2000) claimed that success in our changing world means transforming the way we work, where we work, and the environment we work in. The concept of work transformation is about enhancing the key corporate resources of people, space, and technology to deliver greater business value. "Offices are no longer an accumulation of desks, arranged in rows and adding up to anonymous administrations, but are interfaces in networks linked by data transmission rather than by corridors and lifts" suggested Riewoldt (1994, 7) over ten years ago.

Duffy (1993) described how more and more people who work in offices have become members of networks linked to each other through information technology. This enables them to choose their own time and place of work as well as their method of working and for most organisations, it has been shown that the need to continually change and improve is critical to survival and success. Duffy further

argued for the built environment's role in the process. He (Duffy, 2000) claimed that an organisation that wishes to change its culture, to abandon hierarchy, to encourage interaction, to stimulate creativity, to accelerate innovation, and to break across previously impenetrable organisational silos, cannot persist with an office environment that expresses exactly contrary values.

The positive side of the same argument is that businesses that really do wish to change have a powerful tool available to them in the re-design of the office. For each of the characteristic new egalitarian values such as transparency, stimulus, creativity, lateral thinking, and accelerated responsiveness, Duffy (2000) claimed that there are physical correlates in the language of design. Week (2002) agreed that both architects and managers need to start thinking differently about how the office environment is created and referred to patterns and processes as a way of looking at office design strategically. He gave the example of resolving conflicting requirements by viewing a door not as a 'thing', as just a panel on hinges, but as a way of facilitating both privacy and movement as the need dictates.

Worthington (1997) claimed that the 'international style' of the 'modern movement' which has produced much of the real estate in which organisations reside, rarely confronted in detail, the relationship between the building and the activities of its occupants. Organisations are now becoming characterised by new ways of working with many team based interactions consisting of individuals with mobile and nomadic work patterns. There is a greater use of, and need for, multiple shared work settings; diverse task based spaces; and community areas caused by changing work patterns and often longer, more erratic periods of work. Flexibility of space and time are becoming more critical in the workplace in order to address organisational needs. "Advanced organizations have grabbed hold of the opportunities of new technologies and have re-designed their work processes as well as work spaces" noted Worthington (1997: 26). No mention was made however of the social impacts or implications of employing such a strategy.

In order to maintain progress and benefit from technological advances would suggest that the design of the office must be adapted to the way that the structures and the shapes of organisations are being transformed. Design must correspond to an organisation's strategic and operational management requirements and it must take account of organisational change implications. If the recent past is an indication, the reshaping of space will rely heavily on new information technologies,



not necessarily as the cause of change, but certainly as the medium to facilitate the transformation and/or creation of workplace settings.

Duffy's research and practice in the field of office design has culminated in the development of a 'typology' of spatial arrangements and components. He (Duffy, 1997) described his methodology as using design to achieve business goals in the reinvention and reintegration of the entire business of design, construction, and space management and outlined three critical variables:

1. Those which are about the organisation of work.
2. Those that concern the way people behave at work.
3. Those to do with the physical disposition of the office environment.

The practical application of his model is achieved through a number of processes utilising (DEGW) proprietary methods to analyse the variables. These are:

- WE - Workplace Envisioning
- TUS - Time Utilization Studies
- WPS - Workplace Performance Surveys

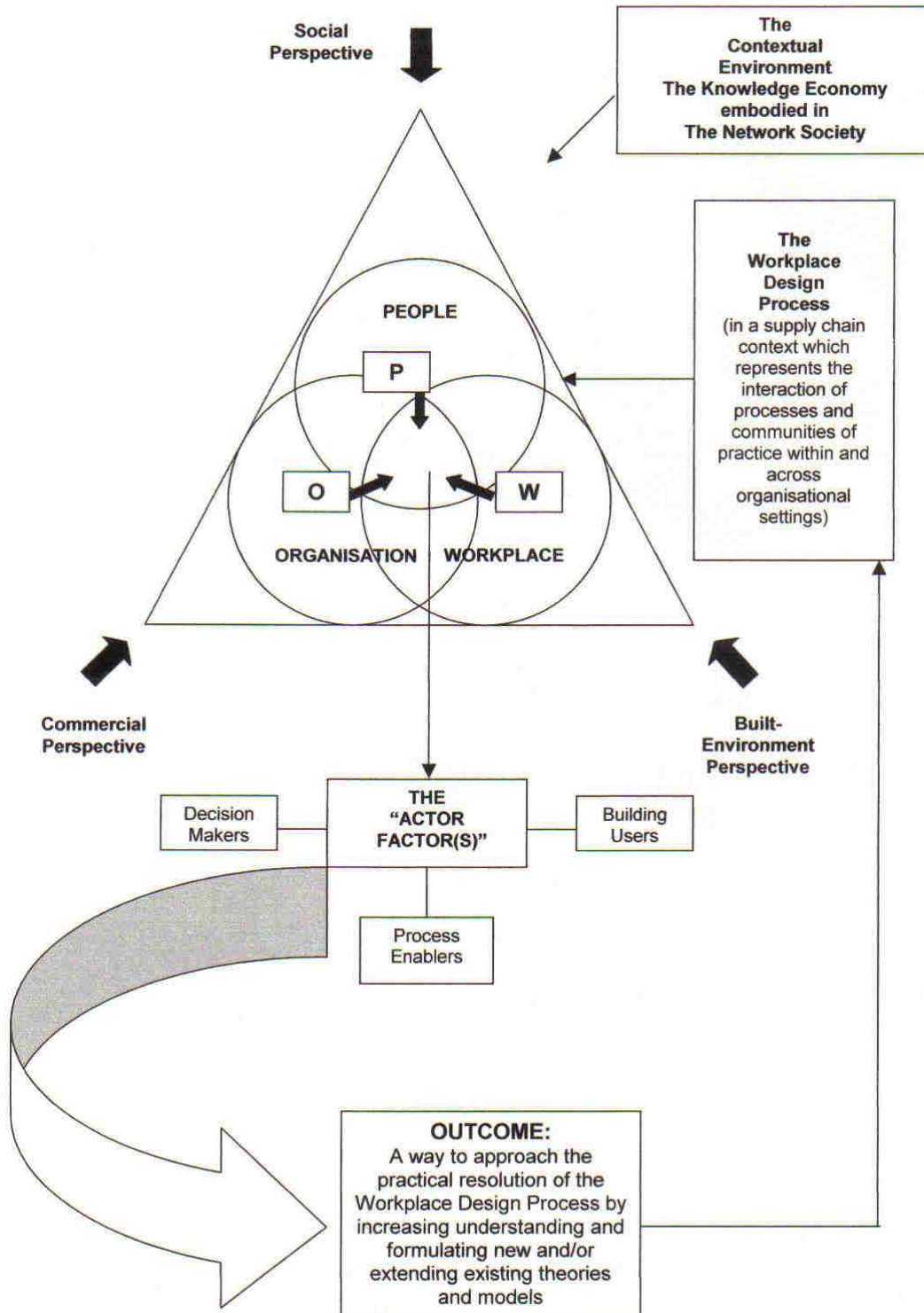
The typology of design components or principles is then utilised in the preparation of the physical design solution, followed by a post-occupancy evaluation (POE) survey a number of months after the 'users' have occupied the space.

Another significant systematic approach has been developed by Franklin Becker and Fritz Steele (1995). Their approach follows what they have described as 'organizational ecology' and in this respect has similarities with the aspects of the workplace included in Duffy's methodology mentioned above. This principle forms the core of The Cornell University International Workplace Studies Program (IWSP) launched in 1989. Under the direction of Becker and William Sims, this program focuses on the ecology of what they term, new ways of working and has been established as an international leader in the study of what has come to be called Integrated Workplace Strategies. Using the framework of 'organizational ecology', the IWSP (2002) examines "workplace strategies as a complex ecosystem in which one simultaneously considers the cost/benefit implications of the interplay of work processes, employee demographics, physical design, information technology, and organizational culture as they converge in a workplace strategy".

The typologies of Duffy and the strategies of Becker are accepted as well-credentialed theories or principles of workplace design and as such are not under scrutiny in the NetWorkPlace™ study. The NetWorkPlace™ Exploration Model (refer Fig. 2.3) was developed to provide a guiding framework for the initial literature

search in relation to this research effort and was established through the principles which underpin the work of Duffy and Becker – people; organisations; and the workplace (POW).

**The NetWorkPlace™ Exploration Model:**



**Fig. 2.3 The NetWorkPlace™ Exploration Model**

The subsequent literature review has led to the conclusion that all previous research had taken account only of single organisations in their isolated contexts. This is contradictory to the purported new ways in which organizations are operating in the era of the knowledge economy and prior to this thesis, workplace design in the network context had yet to be investigated.

### **2.8.3 The Current Scenario**

In the mid-1990s, architects and their clients explored organisational solutions generally referred to as alternate office space which included hotelling, team spaces, and telecommuting to accommodate the purported new ways of working which were being enabled by mobile technologies. These ideas were seemingly driven however by a desire to reduce real estate costs. The noble spin put on them was that they also would provide for improved customer service and employee flexibility but no explanation was provided as to how or why this would be achieved.

Another common solution from the mid-1990s involved reducing the size of individual and common space and installing what came to be known as the 'universal' style of 'one-size-fits-all' cubicles (Caruthers & Heath, 2001). This resulted in greater densities of people by simply providing a generic workspace consisting of less square metres per person, and was characterised as the 'place' where cubicle-dweller Dilbert worked (and suffered). Not unreasonably, one could presume that the inspiration for the comic-strip was inspired by the office existence of many real-life corporate dwellers.

The financial impact of incorporating appropriate design into the workplace has become apparent to some of those organisations traditionally concerned only with reducing expenses to better the financial bottom line. A 1998 study by the American Society of Interior Designers reported on the impact of interior design to a company's financial performance. The study focused on a Detroit based insurance company that designed its new office to incorporate team structures, ergonomic furniture, improved privacy, and state of the art environmental systems, all aimed at improving productivity through the physical supporting structure. Pre- and post-occupancy evaluations performed in 1994 and 1996 respectively, showed a "137 percent decrease in the time required to process client paperwork, a 9 percent drop in errors and defective claims, and a drop in absenteeism from 4.4 to 1.6 percent" (Deering, 2001: 67). This result clearly shows that the quality of the improved office

environment impacted positively on worker performance and increased worker satisfaction. The study report also implied a positive impact on the social aspects of life in this particular office environment. This case indicates that attention to workplace design can translate into good business sense.

Both the direct and indirect consequences of the implementation of innovative information and communication technologies (ICT's) within office environments are taking on a new significance. Technological advances such as portability, networking, and miniaturisation are changing the demands being put on building shells and services and significantly changing how and where work is able to be done. The dominant role of ICT in organisations is now accepted and ubiquitous, and in many cases seen as an indispensable component of business. This is adequately illustrated when many organisational processes grind to a halt if 'the computers are down'.

Worthington (1992: 49) suggested that "commercial success in the future will depend on the ability of companies to absorb technology into the culture of the organization in order to rethink work processes and space usage". He (Worthington, 1992) predicted that the design role would be less about accommodating technology and more about making places where creativity could thrive. Much of the rhetoric about workplace design in the late 1990s reflected this prediction with endless examples of the office version of city streets, town squares, and 'creative' spaces.

There is no denying that creativity and innovation have become organisational necessities in order to achieve market position and in many cases even business survival. The question remains however, has the drive by organisations and designers to provide creative spaces, synthesised or alienated workers in relation to the social dimension of the workplace. There is a strong inference both from the literature and practice that much more investigation is required in order to be able to come close to providing an answer.

### **Flexible Workplaces**

In recent years, growing management interest in more informal ways of working has been allied to the rapid emergence of new workplace technologies (especially cordless) and innovative approaches to space and architecture. Many theories have been expounded on more flexible ways to work and on new physical environments to accommodate and support such change but empirical evidence outlining the

success of these ‘more’ creative approaches have been visibly absent, with most of the rhetoric appearing in glossy magazines and elaborately illustrated books about ‘architecture’ and ‘interior design’. A notable exception was provided by Myerson and Ross (1999) who articulated a rationale for utilising variations of Duffy’s (1997) typologies which they labelled as team, exchange, community, and mobility spaces (refer Table 2.4).

**Table 2.4 New Workplace Space Types**

<b>Team Spaces.</b>	
	Team spaces are said to encourage team building and group working, and promote more cognitive work processes and greater interaction between people.
<b>Exchange Space.</b>	
	Exchange space illustrates how office environments are designed to facilitate the building, sharing, and presentation of knowledge through collaboration.
<b>Community Spaces.</b>	
	Community spaces are included in offices that have been planned to foster a spirit of community and promote greater social cohesion. A key focus here is on creating ‘town squares’, ‘neighbourhoods’, and ‘city streets’ within office interiors.
<b>Mobility Space.</b>	
	Mobility space is epitomised by non-territorial workplaces which offer unprecedented freedom and choice for employees to work where and how they want. There are a range of work settings from open spaces to private cells, supported by mobile technologies. These office types are predicated on an attitude which believes that every day is potentially different, entirely new work patterns can be created as required. One of the major criticisms levelled at the ‘mobility’ philosophy is the lack of ‘ownership’ afforded to workers with respect to private space. This often translates to a resultant lack of ‘connectedness’ to the workplace, to fellow workers, and ultimately the organisation.

Some way to filling the void of evidence is provided by a number of reported proprietary DEGW case studies illustrating the rationale behind the adoption of Duffy’s design methodology and the implementation of his typologies in a number of significant British projects (Laing et al., 1998; Duffy et al., 1998). These cases highlight the importance of consultation with the building’s end users and although glowing in their praise of the outcomes, are scant on the provision of specific empirical details.

Marmot and Eley (1995) recognised that offices cannot be designed to take account of all functions equally, but recommended the concept of providing spaces for particular tasks, and a shift away from individual space allowances relative to status to one based on a justifiable need. Designers must accept the complexity of creating a range of workplace settings to be used by people for different tasks, at

different times, and in a variety of combinations. McGregor (2000) advised that all successful organisations should introduce 'living' workspace strategies which allow the environment to be changed and varied as the organisation evolves.

Based on a large sampling exercise of office workers in the USA (Brill et al., 2000), a view was proposed that the trendy, wide open office, with folks interacting informally all day is a visually seductive myth. The study claimed to have found that this type of design did not support work very well. In reality, only up to a third of time was spent interacting with colleagues and much of this took place at the employee's own workstation. The most logical argument in regard to design considerations and office space however must be attributed to Leaman (1995), who suggested that buildings seem to work best where the integration between physical and human systems is well developed.

### **Implementing Workplace Strategies**

In order to identify and implement workplace design strategies which contribute to an organisation's ability to become more competitive, a fundamental shift in thinking is required. The workplace must be seen as a dynamic tool which supports and stimulates new and varied ways of working, rather than being a static asset viewed only in terms of how much it costs. Such change requires a significant paradigm shift and an associated re-alignment of the way the design process is informed. The linear world most of us have found so comfortable is vanishing. Over a decade ago it was predicted that "our most fundamental beliefs about the way work is structured, including where and when it is done, are in the process of becoming irrelevant" (Becker & Steele, 1995: 103).

It was pointed out that "physical design, by itself, will not change behavior patterns and guarantee teamwork. It can make some activities more likely than others, and when it is in tune with the social system, it can create the kind of lively, interactive setting that supports teamwork and collaboration" (Becker & Steele, 1995: 85). Creating settings that increase the probability of particular activities occurring, such as unplanned contacts to encourage serendipitous knowledge exchange, requires not only providing places for chatting informally, but also making it legitimate to do so from an organisational behavioural and management policy perspective. The issue of legitimacy is critical in achieving the delicate balance between physical design and socio-cultural factors that influence how the design is actually used.

Based on Schein's (1970; 1985; 1999) work on organisational culture, research by Martins and Terblanche (2003) highlighted the determinants which influence creativity and innovation in organisations. These were identified as including strategy, structure, support mechanisms, behaviour that encourages innovation, and open communication. It was conceded that there was a need for more empirical research to support the theoretical findings but if it is accepted that creativity and innovation are essential for organisational survival, and that idea generation and the dissemination of knowledge are rapidly increasing (Senge et al., 1999), then it is obvious that the built environment has a role to play in the change process being experienced on a global scale.

The physical environment can convey non-verbal messages which may reflect or contradict an organisation's stated vision, mission, and purpose. These non-verbal messages are a particularly powerful medium if utilised appropriately. Non-verbals are often interpreted as being more truthful than written or spoken messages where a contradiction occurs (Mehrabian, 1981; Rapoport, 1982). The built environment can reflect the structure of an organisation, most notably in the status symbol language that governs space allocation and utilisation (Hall, 1996). Physical space can be considered, in most instances, an essential organisational resource and as such operates as a support mechanism which can both enable or inhibit efficient functioning. This is most obvious in the creation of spaces which facilitate, for example, cooperative teamworking, group interaction, privacy, and the ability to satisfy the psychological need for territoriality (Smith & Kearney, 1994).

Hartman's (2002) research highlighted that an organisation's physical environment is an often overlooked and under-utilised intangible asset which influences both behaviour and the ability or opportunity for communication to take place. She (Hartman, 2002) also reminded us of the long held 'scholarly' proposal that there is a direct and causal link between physical space and peoples' behaviours. In this respect, buildings both set limits and offer opportunities for certain behaviours to occur. Spatial relationships and technology devices have a direct influence on people's ability to communicate with each other, but space has the additional characteristic of creating opportunities for serendipitous contact.

Pugsley and Haynes (2002) reported the need to undertake detailed studies of individual workgroups to thoroughly understand their working methods and their need for different workplace settings as an essential part of the design process. Importing designs and standards from elsewhere is unlikely to be successful and in

large organisations, different approaches are likely to be needed for each work group depending on their business and operational needs.

### **The Ubiquitous Change**

Just as the role of computers themselves has changed dramatically in the last ten to twenty years, so has the role of the office. The biggest contributor to the changing office is the advent of ubiquitous connectivity. In the age of the internet, access to information is expected at any time and from any place. Computers have gone from a fundamental 'number crunching' role to one of enabling 'connection' and 'communication'. Office work in the traditional sense is changing in many instances and different types of work need to be supported by different types of offices.

McIntosh (2001: 33) noted that in today's marketplace, "the only sustainable competitive advantage is the ability to innovate again and again and again". Gladwell (2000) observed that innovation, the heart of the knowledge economy, is fundamentally derived through social activity. To facilitate this 'social' work, an office needs to foster connectivity, convening, collaboration, and creativity. This requires a mix of high-energy and low-energy spaces, places to spread out, places to come together, and places of retreat, in short, a space collective that provides variety and choice. This philosophy blurs the boundaries of what is traditionally considered to be office space and that which acts as social space.

Malcolm Gladwell (2000: 60-70), in his *New Yorker* article *Designs for Working*, makes reference to Jane Jacobs' (1961) masterpiece, *The Death and Life of Great American Cities*, made reference to her old neighbourhood in New York City and argued that without an active street life, without the frequent serendipitous interactions of many different people, there is no public acquaintanceship, and no cross-connections with necessary people. Gladwell (2000) suggested that Jacobs' views have taken on a new and unexpected relevance. Who, after all, he asked, has a direct interest in creating diverse, vital spaces that foster creativity and serendipity if not modern day employers? More than forty years after its publication, Jacobs' book has been reborn as a primer for workplace design and is echoed in the case put forward by Karen Stephenson (1998, 2000a) as critical for organisations operating in the knowledge economy.

In closing his argument, Gladwell (2000: 70) commented that "in all the studies of the new workplaces, the reservations that employees have about a more social



environment tend to diminish once they try it. Human behavior, after all, is shaped by context, but how it is shaped – and whether we’ll be happy with the result – we can understand only with experience.” There is no shortage of evidence to illustrate the global activity in the reinvention of corporate workplaces. However, very little evidence has been found of “all the studies” to which Gladwell referred. There is no doubting that realisations will come with experience, but understanding requires structured investigation and empirical validation. It is contingent upon the design professions who create the workplace environments to elaborate this understanding.

Journalist Nikki Barrowclough (2001: 23), in referring to Australian organisations, reported that “communal quiet rooms, or quiet areas are fast replacing individual offices ..... in firms around the country”. She noted that companies as diverse as accounting giant Arthur Anderson, real estate leaders Colliers Jardine, and the international consulting firm Pricewaterhouse Coopers have embraced the ‘new’ approach to workplace design. Senior management is supposedly being re-educated to accept smaller offices or no offices at all, and staff who are in the office for only short periods occupy what have become known as ‘touchdown spaces’. During a visit made to Foxtel’s warehouse premises at Sydney’s Darling Harbour which has a (Jane Jacobs’ style) ‘street’ running the length of the building, Barrowclough (2001, 23) wrote: “Its called Main Street, although it doesn’t look very different from what used to be called a corridor. I walked down Main Street at 11 o’clock one morning, but as a public thoroughfare, it was pretty disappointing. In fact, it was empty. Everyone was too busy working.”

James Calder, the then Australian managing director of Duffy’s international design and workplace consultancy firm DEGW, warned that “a lot of assumptions are being made about how people work, and that the reality doesn’t always match the rhetoric” (Barrowclough, 2001: 23). The foregoing quotes have been extracted from an article appearing in *The Sydney Morning Herald*, a publication which may not possess a high degree of academic rigour. It is argued however that the comments are representative of the community and thus have a social validity in the context of the NetWorkPlace™ study. James Calder’s insight should sound a warning regarding suitability, usability, and acceptability of the environments currently being created in the workplace. There certainly appears to be a paucity of convincing evidence in the form of empirical research available at this point in time.

The example of TBWA\Chiat\Day's experiment with radical restructuring is perhaps one of the best known of a failed attempt to create an innovative office environment to facilitate the 'new ways' of working.

“When the celebrated advertising firm built new offices in Los Angeles a few years ago, it made the bold step of eliminating people's desks. There were still work surfaces and rooms and whiteboards, but at the end of the day people had to put their things in their lockers before they could go home. On the surface, the rationale was somewhat plausible. People do all their work in teams, so why not design the office to maximize the recombinations of people, place, and production? What TBWA\Chiat\Day learned the hard way was that there was information embedded in the arrangement of people and their desks, such as who was working together, and how. Especially in the information age, the social context of information is as important as the information itself.”

(McIntosh, 2001, 35)

The shrinking of time and space in an increasingly global society along with increasing mobility have left many people with no sense of 'connectedness' or 'rootedness' to a time, place, or culture. This includes people in the workplace who have, in many instances, lost some of their sense of identity (Burgess, 2000). If 'place' is to be considered as a key element of personal identity, then this is a timely reminder and raises a challenge for architects and interior designers. While we are redesigning workplaces to allow people to collaborate with colleagues from around the world, are we as conscious of the social infrastructure as we need to be? It is contingent upon the design professions to ensure that the 'e-revolution' of the early part of the twenty-first century will not be as unmindful of social content as the 're-engineering' revolution of the latter part of the twentieth century appears to have been.

The on-going change and innovation processes alluded to in the literature suggest that a continuous protean shape-shifting is being experienced within organisations. The associated environmental and spatial elements of this phenomenon further suggest a simultaneous disruption of place and the seeking of a new sense of place by organisational members. The added dimension of the network entity as a direct consequence of what Castells (2000) described as the *Network Society*, requires that the traditional concept of 'place' is extended. In this context, 'place' can be distinguished as both a physical setting and also as a social construction relative to relationships, experiences, roles, and information exchange, that is, a member's 'place' in the organisation or the network. The social thus becomes intertwined with space and represents a mechanism to support change and the evolution of a new 'sense of place'. Hartman (2002) reported that the concept of 'place' attachment is a relatively new area of study within organisations. The concept of emotional

bonding between people and places, that is, place attachment within an organisation, thus has particular significance for both the social dimension and the physical environment.

#### **2.8.4 The Importance of Place**

McIntosh (2001) discussed that some would-be forecasters predicted the information revolution would make location of workplaces irrelevant because people would be working from home or using their offices for tele-conferences. Despite all the investment in tele-conferencing equipment, senior managers found that they were travelling more, not less. It has turned out that there is no substitute for meeting people face-to-face. The one law that the digital revolution has not rewritten claimed McIntosh (2001) is the 'law of unintended consequences'. It seems that the better the communication tools we are equipped with, such as e-mail, the more people we stay in touch with. The consequence of this is that there are then more people whom we need to spend face-to-face time with in order to maintain the social relationships established.

Mitchell (1999: 91) pointed out that ".....the growth in telecommunications during the 1980s and 1990s has - seemingly paradoxically - been accompanied by burgeoning demand for hotel meeting facilities and convention centers." Much of this he suggested can be explained by a characteristic behavior of geographically distributed businesses, professional organisations, and interest groups who sustain themselves by means of electronic telecommunications, then find that they need face-to-face get-togethers to refresh relationships among members and to re-establish trust and confidence. Conversely, face-to-face contacts stimulate subsequent telecommunication. This emergent pattern of interaction indicates that physical meeting places and virtual spaces share a co-dependence with each other.

Face-to-face meetings are critical at the beginning of relationships in order to establish trust and mutual understanding. This requirement does not abate in later stages if relationships are to be maintained, or delicate business negotiations are to be undertaken. "Video-conferences don't capture the same wealth of information that we collect in person" (McIntosh, 2001: 38). As a result, the need for physically interactive spaces where people 'meet' and perhaps work together will not disappear, if anything, an increase in this need is a more likely possibility. The biggest paradox of the electronic communication revolution is that by enabling

people to work almost anywhere, it has made 'places' more important than ever. Even though 'crunching' work can happen anywhere in the world and much 'manufacturing' is undertaken off-shore in developing countries, convening, face-to-face work where real value is created, happens in high-value locations. The outcome is that as long as people matter, 'place' will too (Mitchell, 1999).

The full impact of electronic technologies on spaces and places is by no means clearly understood. This impact is vitally important in the workplace context due to the majority of the labor force, at least in the developed countries, being involved in processing and manipulating electronic information in some way. Electronic technologies have significant social consequences as Joshua Meyrowitz has provocatively argued in *No Sense of Place* wherein he proposes that the "electronic media affect us primarily not through their content but by changing the 'situational geography' of social life" (Relph, 1993: 30).

Globalisation and the development of the knowledge economy are widely mooted as the reasons why now many more people travel for business purposes, purportedly doing much of their work while on the move. It has been suggested (Breure & van Meel, 2003) that in the management literature, you can find plenty of rhetoric about 'road warriors' that roam the world with just a palmtop without much validation for such claims being supported by empirical research. The outcome of Breure and van Meel's (2003: 177) research was they discovered that "business people travel mostly to attend meetings with clients and colleagues" and even though the respondents stated that they used the telephone, email, and video-conferencing, none of them thought that technology could replace the need for face-to-face interaction. It was reported that personal meetings such as sharing a meal or drink are essential for creating the basis of trust and bonding. Based on this research, "real-life contact and not technology, is the main reason why these mobile workers are mobile" (Breure & van Meel, 2003: 177). The need to provide physical places to enable face-to-face contact to remain as an essential organisational activity is therefore not now, nor in the foreseeable future, redundant.

Digital technologies allow people to change the workplace in a fundamental way. The connectivity enabled by new digital technologies has opened new opportunities for how, when, and where people work. Those opportunities, when exploited, can help organisations be more effective in their use of human capital. Joroff (2002) suggested that workplace professionals can effectively harness the connective power of technology as an integral part of workplace design but that design should

create the best combination of physical and cyber space. No clues were included however about how this might be done. One way of addressing the issue Tuomela (2003) suggested is by increasing knowledge about understanding and managing network relations in the new workplace environment and to undertake further research on informal relationships within these networks.

In an attempt to gain some insight into the balance between physical and virtual space, Nenonen (2004) found that work environments tend to support explicit knowledge sharing but fail to support tacit knowledge exchange. Buildings and the spaces and places they embrace, continue to play a vital role in the intangible area of knowledge management. Unfortunately this appears to be insufficiently recognised at this time. The headlong rush to implement technology-focused knowledge management solutions will indeed increase the neglect of both space and place as a critical element in knowledge management (Nenonen, 2004). It has been stated however that the single most important factor shaping the quality of knowledge is the quality of place (Nonaka et al., 2001).

### **2.8.5 'Sense-of-Place'**

Before probing into the conceptual strategies of architecture in detail, it is necessary to investigate the nature and purpose of architecture claimed Unwin (1997: 13-14). "Before we can get onto the how?, we need to look briefly at the what? and the why?; ie what is architecture? and why do we do it?" He offered a definition of the 'what' of architecture as the "conceptual organization and intellectual structure" of a building and a definition for the 'why' of architecture as "identification of place". These he explained are derived from a need to explore buildings as a result of the interaction of people with the world around them. At its fundamental level Unwin (1997: 16) posited, "architecture does not deal in abstractions, but with life as it is lived, and its fundamental power is to identify place." He extended this notion by suggesting that "the idea of architecture as identification of place asserts the indispensable part played in architecture by the user as well as the designer ..... it asserts that places proposed should accord with places used" (Unwin, 1997: 15) which lends weight to the argument that design needs to be a collaborative process.

It is necessary before proceeding further to differentiate between the terms 'space' and 'place' as they are referred to in terms of design in this case. Often they are used interchangeably but they denote quite separate concepts and commodities.

Space is a physical, (usually) measurable volume and is a prerequisite for the formation of place. Place, according to Lindahl (2004), is space given meaning and such meaning is related to context. Berleant's (2003) description of what constitutes place contains perhaps the most critical dimension of all because it concerns the primary consideration of human experience.

"In its most basic sense, place is the setting of the events of human living. It is the locus of action and intention, and present in all consciousness and perceptual experience. This human focus is what distinguishes place from the surrounding space or from simple location."

(Berleant, 2003: 42)

"Many similar terms such as community attachment, sense of community, place attachment, place identity, place dependence, and sense of place" (Hidalgo & Hernandez, 2001: 273) have been used such that it is often difficult to differentiate between them and whether in fact they refer to different concepts or the same concept with a different name. Currently, there seems to exist a certain consensus in the use of the term 'place attachment'. In general, place attachment is defined as an affective bond or link between people and specific places (Hidalgo & Hernandez, 2001: 274). It has been defined (Altman & Low, 1992: 165) as "an individual's cognitive or emotional connection to a particular setting or milieu." It is further claimed that the places to which people are attached can vary in scale, specificity, and tangibility. Hidalgo and Hernandez (2001) concluded that social attachment, that is, attachment to people in a particular place is stronger than attachment to the physical dimension of place but that these two components come together to form a general affective feeling towards place.

Others have indicated that there are two dominant dimensions of place attachment, these being place identity and place dependence (Kyle et al., 2004). Discriminating variables for sense of place have been found to be "place attachment (described as emotional bonding and behavioural commitment), sense of community (described as affiliation and belonging), and place dependence (related to available activities)" (Pretty et al., 2003: 273).

Stefanovic (1998) identified images of significance in the evolution of sense of place whilst Hay's (1998) study considered cultural aspects in defining a sense of place. Mahmood (1994) explored the phenomenon of a particular place to emphasise the position and meaning of that place in the lives of the participants involved. He concluded that the micro-cultural system of a 'place' is a part of the larger cultural system. This can be likened to the sub-groups within a total organisational culture.

Venkatesh and Mazumdar's (1999) study concluded that social space may be identified in terms of the structure, the activities, and the social dynamics which occur between and among members. Clark and Uzzell (2002) utilised Gibson's theory of affordance as the basis of a methodology for measuring the need for places of social interaction and for places of retreat.

The sense of identity fostered by place attachment can promote a range of desired qualities of person and place, including a feeling of community and increased social interaction. The rich layering of meanings and symbols that occur with the use of space, creates meaningful places and as suggested by Hull (1992), can increase people's social image[ability]. Thus the process of 'place-identity' development can in turn, promote 'self-identity'. Hull (1992: 189) posited that "image congruity reflects the degree to which the values, concerns, and lifestyles symbolized by a place are congruent with the values, concerns, and lifestyle of self. If image congruity is in fact linked to place attachment, then place attachment is more likely to result when the conditions of image congruity are met." This has particular significance for 'places' of work as a means of promoting and supporting sociability and interaction.

Further to this, research has shown that 'place' imagery has a powerful impact on the design processes of practitioners (Downing, 1992). The ordering of space in buildings is really about the ordering of relations between people. "Buildings are not to be seen as physical objects or artifacts created by people, but rather as the means to create and order volumes of space into social patterns" (Hasell et al., 1993: 3). In this sense, buildings can be considered envelopes of social behavior, created for social purposes, through which society is both constrained and recognisable. Rapoport (in Hasell et al., 1993) suggested that semi-fixed elements such as furnishings are arranged and rearranged by people for particular activities within spaces. The location of furnishings and the presence of people, both non-fixed features within environments, thus become critical in the study of spatial use. As Rapoport and others argued, although the built environment can either be neutral or else guide, inhibit or facilitate behavior, it cannot 'determine' behavior. As noted by Bernstein (in Hasell et al., 1993: 3), "the strength or weakness of rules and codes influence the behavior of people as well as their interactions with one another. The classification of space in terms of strong or weak boundaries helps to structure the relationships that are possible in spaces, while the framing of space (how the objects are put together) tells something about the relationships over time".

In this context, 'sense of place' connotes a myriad of values, beliefs, feelings, hopes, and fears that human beings attach both individually and collectively to certain spaces, locations, regions, or environments. The extent to which people feel that they 'belong to' or feel 'at home in' a place, is generally related to a person's perception of place as being rooted in a set of time-honoured local traditions and customs (Bullock & Trombley, 1999: 652-653). This connection is equally applicable to the 'workplace' and is the concept which underpins 'sense of place' as it is referred to throughout the NetWorkPlace™ study and this thesis generally.

Schneekloth and Shibley (1993: 123) stated that the designer's approach to placemaking must "assume the legitimacy of every person's experience of living". This equates to what Heidegger would term, 'being-in-the-world'. Chastain (1999: 6) suggested that "the essence of a place resides not in the physical setting of the place but in the practices of producing and inhabiting it". The work of architects in this sense can best be understood as enabling and facilitating 'others' in the various acts of placemaking. "Norberg-Schulz ..... advocates that architecture should aim to concretise economic, social, political and cultural intentions in a way that captures the 'genius loci' or 'sense of place' of an environment" (Franz, 1997: 80).

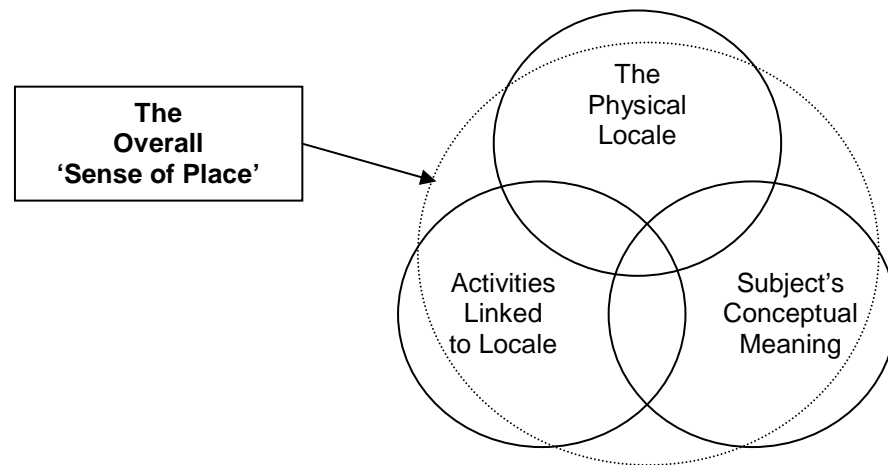
Anecdotal evidence indicates that many people today spend more of their waking time in their offices, or 'being-at-work', wherever that may be, rather than in their homes. The processes of place-making in organisations then presents special opportunities for collaboration between professional place-makers and professional place-users. Goals and missions of organisations imply functions which are expressed through the breakdown of organisations into departments, business units etc. Functions in turn imply activities which are carried out in designed environments. Finally, activities imply behaviors of occupants within those designed environments.

Frequently, there are differences in values and beliefs held by the various groups or organisational units. Resolving design problems which accommodate such differences may help in achieving a satisfactory built environment for all who interact with it. This implies that a collaborative or participatory approach is essential in order to gain an understanding of the interpretations of the 'inhabitants' as they undertake their various 'practices' in the act of 'place-making'.



## 2.8.6 Place Theory

Amongst the many variations proposed regarding the concept of 'place' (refer also Chapter 7), David Canter's version is a well established theory often referenced in literature from the architectural and the environmental design research fields. Canter (1977: 157-158) proposed that physical environments embody a particular significance as a result of the interaction of three domains: the physical locale, the activity performed in that locale, and the meanings assigned to that union of place with activity. It is these three parameters: locality, activity, and assigned meaning which frame the understanding of and provide the essence for a 'sense of place' as defined by Canter (refer Fig. 2.4).



**Fig. 2.4 Canter's three-fold 'Sense of Place'**  
(Source: Canter, 1977)

The 'sense of place' concept is relied upon as a pivotal point of reference for the NetWorkPlace™ study as it forms the theoretical underpinning for the formulation of both a process and a practical model which is outlined later in the thesis. The model developed (refer Chapter 7) enables the mapping and interpretation of what 'being-at-work' means for members in order to gain an understanding of the person-person-environment (PPE) relationship within the network context. Further variations of the sense of place concept are later discussed and extended to include both the 'space of place' and the 'space of flows' as integral components of the description and the development of the NetWorkPlace™ Mapping Model (refer Chapter 7).

Theory can be defined as “a set of interrelated concepts held as an explanation for observable phenomena by recourse to unobserved, more abstract principles” (Groat & Wang, 2002: 75). Place theory in the traditional sense and also in the re-configured notion of space influenced by Castells’ ‘space of place’ and ‘space of flows’ is integral to the discussion and understanding of the NetWorkPlace™ phenomenon.

David Wang (Groat & Wang, 2002: ix-x) outlined a personal experience which provides a simple but enduring example of observed phenomena being explained by ‘sense of place’ theory. This brief story is worth quoting at length as it fully illuminates how ‘sense of place’ not only embodies the essence of ‘being-in-the-world’, but also captures what the very nature of ‘doing architecture’ is, or could be about.

Some years after earning my PhD, after we had moved from Ann Arbor and settled again into a more spacious home (3 bathrooms) in Spokane, Washington, I asked one of my sons whether he liked our new house or whether he still preferred the cramped quarters at Northwood Five. Without hesitation, the answer was Northwood Five. “Why?” I asked. “Well,” he said, “there is no dumpster here.” You see, our unit at Northwood Five was located right next to the communal dumpster. Often in the predawn hours we would be awakened by the beep-beeps of the garbage truck backing up to unload the darn thing. But that dumpster was the community information center. For my sons Jeremy and Andrew, the dumpster offered them opportunities for making some spending money. They would tape flyers on it to hawk their services, next to all the other flyers announcing everything from piano lessons to furniture sales. Jeremy, for instance, made a few bucks fixing bicycles. My sons weeded gardens, babysat, ironed shirts for pay, all thanks to their flyers taped to the dumpster. Over the few years we lived in that housing complex, the dumpster made the difference in terms of “**a sense of place**” for my kids.

..... My years of practice led me to conclude that the relationship between the human being and the built environment was not a simple one, but rather composed of multiple connections, and richly and profoundly so. On the other hand, early in my education as an architect, I had somehow picked up an implicit message that goes something like this: If you can only come up with a nifty physical form, one that excites the eyes, one that is deemed worthy of ‘the magazines’, then, to adapt a phrase from John Ruskin, ‘*that*’ is architecture! In short, if the physical form is really nifty (and ‘nifty’ kept changing in meaning, like a flavor-of-the-week sort of thing. What chance do you think Frank Gehry’s museum in Bilbao would have had to even see the light of day in the 1960s? But now it is considered by many to be great architecture.) - if the form: is really nifty, all of the positive subjective feelings of identity, communal well being, and so on, would ensue. It took me some years to realize that this idea may not be fully true. The answer to what comprises the relationship between the human being and built environments, in terms of what makes such relationships rich and successful, is much more complex. At least the answer must somehow accommodate that dumpster.

(David Wang in Groat & Wang, 2002: ix-x)

## 2.9.0 Design Process

The definition of design proposed by Groat and Wang (2002: 101) refers to the “conceiving of built forms by responding to clients, programs, budgets, and other ‘real-world’ factors ..... intermingled with the designers’ conceptions and visions, and ultimately translated into graphic representations that increase in detail until they become the guiding images used to construct the actual project”. A level of criticism by various authors has been directed at the architectural profession as a whole. A number of indicative quotes are provided following to emphasise the fact that the perceptions from outside the ranks of a profession are often different to those from within. Architecture is clearly not immune from the possibility.

Fisher (1996: 36) claimed that “ours is a profession that has lost its way, that has forgotten the original reason for its being“. Is not that reason to provide a key element in improving peoples lives through the ‘places’ we help to create? What architects did in the past was often linked in the public perception to broad moral and social goals. That link, Fisher (1996) claimed, no longer exists. “We have bored ourselves to death, and we have lost our audience, who were not invited in the first place” (Halsband, 1996: 38). This statement implies, and perhaps with justification from some sectors, that the architectural profession itself has created through its approach to the design process, a perception of ‘elitism’.

What is needed from within our own ranks, involves both the process and purpose of architecture. Thomsen (1996: 88) suggested that “we can be as creative about the process [of architecture] as we are taught to be creative about the product”. As Rowe (1996: 242) reminded us, an education in architecture “as much as anything ..... concerns a way of thinking about the world and about architecture in an intellectual as well as a practical sense”. The first step, Rowe suggested, is to get architects and non-architects to work together, not to diffuse the sense of authorship or responsibility, but rather to realign the source of creativity. We need to be good at listening to what client’s needs are and adapting to them. Perhaps through cooperation and collaboration, with the application of more than one intellect, more than one body of experience, and more than one viewpoint, we can strive for more satisfactory project outcomes and help relocate the profession into a position whereby commercial and social responsibilities can be adequately and appropriately accommodated in parallel.

### 2.9.1 The Current State of Design

It was demonstrated through research over twenty years ago that “worker involvement is directly related to satisfaction” (Wineman, 1986: 309). The importance of worker participation in the programming of office space indicates that the acceptance of innovation in office settings may be highly dependent upon user involvement. It is the act of being involved in the process which is the key ingredient. Participation in the process appears to be important whether participation results in actual physical change or not. Wineman (1986) extended the argument by noting that the complexity of the office setting suggests the need for a closer liaison among professionals and participants in the planning and design of environments to eliminate what he has called ‘undisciplinary problem solving’. By this is meant the process through which decisions are made in one discipline or domain of interest without regard for their impacts in other areas.

Hubbard (1995) discussed the need to consider each of the stakeholder’s objectives. He referred to the owner’s need for some level of economic return; the user’s need for satisfaction with the environment; and the architect’s need for professional satisfaction with the outcome. “Once we have a handle on how advocates of each of the three discourses think, we need a picture of how they can work together to produce a building that each camp can feel will fulfill its idea of what the building is for” (Hubbard, 1995, 15).

Reis (2000: 1) concluded in his study that “the main reason for the lack of user satisfaction ..... has been attributed to the control by the architect over design decisions with no user participation at all”. Although this study was undertaken in the context of mass housing design, it has practical and social implications whatever the context. One of the difficulties discovered in the study is what the concept actually means. Used on its own, ‘participation’ is a relatively open concept meaning different things and different types and degrees of user involvement to different people. The lack of agreement arises because the term in itself does not specify the degree of user control, the scope of what it encompasses, or when it takes place. Accordingly, it seems necessary to make the details explicit on a case by case basis in order to minimise confusion between participants.

Outcomes of particular significance from the Reis study (2000: 6-7) indicate that there was a clear wish by users to participate in the process prior to construction although they were not afforded the opportunity. Changes made as a result of user

involvement after construction and as the consequence of a post-occupancy evaluation, did not increase user satisfaction with the participation process. This clearly indicates from a user point of view, that pre-design participation or collaboration is a preferred process to a post-occupancy evaluation, even if the latter does result in required changes being made. Participation in the pre-construction (design) stage would seem to indicate that users' feel a greater sense of involvement in the process and hence more influence over their own destiny. This is clearly an important issue in the collaborative style of design process. Reis (2000: 14) concluded that there seems to have been a "jump from almost no real consideration of the factors most affecting user satisfaction ..... to total user involvement in design advocated vehemently by some". This appears to have occurred without the necessary attention having been paid to a middle course, that is, a process for the gathering of and respect paid to information appropriate to the case and the context.

Duffy (2001) claimed that instead of thinking about and communicating with users in the process of office design, the developers, architects, building systems and furniture manufacturers, facilities managers, and corporate real-estate managers have all become cornered and marginalised. He insisted that you can't do design without the necessary investigative effort to make sure the culture corresponds to the space. "In the minds of many designers and architects, there seems to be an inherent divide between design and research" (Groat & Wang, 2002: 101).

### **2.9.2 Evolution of the Process**

A comprehensive coverage of the development of the various design theories/processes and associated methodological studies undertaken in the field of architectural design is to be found in Franz's PhD dissertation (1997: 19-89). The NetWorkPlace™ study, which explores a 'way to inform the design process', draws on this work in an attempt to ensure that both an ontological and epistemological consistency is maintained throughout the elements which constitute the aim (a way to inform), the objective (the design process), and the investigative methods (the methodology) adopted for the study in this case.

In the past, architectural designers have been charged with being guilty of a preoccupation with the manipulation of form, with little or no attention being paid to the ultimate building users. Contemporary design approaches now embody much

more of a commitment in responding to the needs of users. What has occurred in recent years is a redefinition of design in terms of user experience. This transition in design philosophy is seen as a reaction to the processes embedded in the age of the industrial revolution. An acknowledgement of the social implications of design began to emerge with the revolution in cultural thought during the 1960's and the 1970's and is now once again at the forefront of the design debate.

### **The Environment – Behavior Approach**

A vast amount of literature has been produced on environment-behavior research with the accompanying inference of the need for the involvement of psychology, or sociology, or whatever other aspect of behavioral science could contribute to an improvement in relation to architectural design. One of the pioneers, Rapoport (1970) described this movement as man-environment studies, commenting that it differed from traditional design approaches of the time because of the consideration given to both people and the environment. He (Rapoport, 1970: 257) suggested that by implication, “such studies deal with the questions of *what* and *why* to build rather than the technical question of how to build what has already been decided”. Rapoport indicated that the Environmental Design Research Association, which included the Design Methods Group, was a professional body formed to lead the research efforts in this field. Design Methods was seen as involving the structuring of problems and information handling whilst Man-Environment Studies dealt with the nature of the information needed.

The link between the physical environment and social behaviour is now well established in the academic literature (Donald, 1994; Baldry et al., 1998; Waterman, 1995). According to Johnson (1994: 317), the environmental psychology literature began to emerge in the 1960's and was “generalized from the studies of self-actualized individuals and of the psychology literature by the existentialist psychologist Abraham Maslow, who construed human needs as a hierarchical set.” A vast amount of literature is still being produced from this field and is informative for the NetWorkPlace™ study in terms of understanding and being able to interpret aspects of workplace behaviour from an investigative viewpoint.

Miller and Schlitt (1985: 1) defined environmental psychology as the study of “the interaction between people (their behavior and experience) and environments (built and natural). The environment affects us.....But, at the same time, we actively influence the environment in the process of using it to satisfy our needs.” The aim of

the workplace design process then, predicated on environmental psychology considerations, presumes the inclusion of a social element to create a person-environment 'fit'.

Stimson (1986) commented that spatial arrangements can be both restrictive and productive of social relations and suggested that some inspiration may be found from the semioticians of architecture. "Architecture is, after all, not just a sensory experience, but it has a materiality, it embodies and imposes a sense of social order and social structure.....Hall coined the term 'proxemics' to refer to people's use of space as a specialised elaboration of culture" (Stimson, 1986: 652). Hall determined that there were four categories of distance between people which define their 'comfort zone' in various situations. These are described as the intimate, the personal, the social, and the public distance. "Given these culturally embedded assumptions about social distance, it is but a short step to a consideration of how the spatial arrangements of rooms may enforce, encourage, discourage, or preclude certain ways of behaving" (Stimson, 1986: 653).

Preiser (1999) and Vischer (1989; 1995; 1999; 1999a) have been at the forefront of the quest to evaluate the human-environment relationship and translate this into meaningful, measurable terms. As an attempt to understand the quality of environments as perceived by their occupants, Preiser (1983; Preiser et al., 1988) has developed an overarching, integrated theoretical base which can partially explain the interactions between environment and behavior. He has termed the techniques which he has developed, the 'Habitability Framework'. Preiser (1991; 1991a) suggested that in the 1990's, design professionals finally began taking notice of the need for a focus on user requirements.

Vischer's (1989) work in relation to the environmental quality in offices delineated the 'Building-In-Use' assessment which is a quantitative, systematic approach. This is a technique for building performance measurement which helps explain the complex subject of the influence the physical environment has on people in the workplace. She claimed that the most useful evaluation studies, both qualitative and quantitative, have been derived from models that incorporate user-building interaction, located in specific organisational contexts as a 'total system'. Many researchers have found objective and subjective data to be poorly correlated (Preiser, 1994: 96). Much of the work has focused on the built environment's effects on the perceptions and behavior of workers (Marans & Spreckelmeyer, 1981 and

Goodrich, 1976 in Preiser, 1994: 96) and the influence of space on office productivity (Brill et al., 1984 in Preiser, 1994: 96).

Spreckelmeyer (1995) argued that the dominant models of design and analysis used by architects and environmental researchers have focused too narrowly on the instrumental aspects of the workplace and have ignored the broader implications of culture and social processes. The effects of an undue reliance on the technical and objective measures of modern commercial processes are seen as the primary impediment to researchers and designers in their search for improved working conditions in the office setting.

The role of the built environment on employee performance and satisfaction level has been the subject of on-going debate. Current discourse seeks to discover how the built environment promotes or retards organisational change. Whether or not significant change arises at all is yet to be definitively established (Ilozer et al., 2002). The work experience in any organisational context is a complex mixture of economic, political, physical, and social dimensions. Work environments must by their very nature, embody the practicalities of the work task as well as the aspirations and values of workers and the organisation. Spreckelmeyer (1995, 105) suggested that “the design of the workplace must balance what are denoted as the ‘instrumental’ and ‘spiritual’ dimensions of the environment.” This central characteristic in workplace design can be described as the tension that exists between the collective sense of corporate purpose embodied in the modern office setting and the individual worker’s drive for autonomy and personal control.

Mazumdar (1995) examined work environments to describe how the physical environment forms part of what had been seen largely as social phenomena, suggesting that perhaps cultural norms required members to ‘keep to one’s place’ because each social category seemed to have its ‘own place’. Mazumdar (1995: 13) concluded that the integrated operation of socio-cultural values and the physical environment together, does seem to affect behavior and further, that “there is a symbiotic relationship between society and architecture, and that they work together to achieve social effects, such as differentiation, in organizations”.

In the area of workplace environment research, quantitative studies typically investigate one variable of environmental satisfaction or a select number of variables, in isolation. Many studies in a work context systematically consider the impact of the physical environment on staff, generally focusing on levels of physical



comfort (Sundstrom et al., 1994; Lyman et al., 1993; Hedge et al., 1993; Dumesnil, 1987). No criticism is inferred in regard to these types of studies, they do precisely what they aim to do. They do not however, provide any clues as to the understanding of how social order is constructed in the workplace. It would appear that a much thicker and richer description of 'being-at-work' is required suggesting there is a large opportunity to implement studies based on the qualitative approach.

The environmental psychology literature accessed focuses primarily on the relationship between the environment, human behaviour, and user perception. The behaviours of individuals or groups in response to prompts or stimuli, where both gradual, evolutionary contextual shifts, and sudden or dramatic contextual transformations have been explored (Clitheroe et.al., 1998). The vast majority of studies deal with the investigation of user satisfaction with and perceptions of the work environment in terms of variables such as privacy, personal space, territoriality, noise, and similar issues related to comfort (Chigot, 2005; 2003; Demirbas & Demirkan, 2000; Garling, 1998; Gonzalez et.al., 1997; Pedersen, 1997; Ahrentzen, 1989).

"Perceptions of privacy in work spaces are correlated with the degree of physical enclosure" (Sundstrom et al., 1982: 382). "The open-plan office now has a stigma attached to it in the UK that is unlikely to be lost in the near future" (Hedge, 1982: 540). Although the open-plan office arrangement in Hedge's (1982) study did create a favourable social climate, this did not offset employees' negative reactions to work conditions but rather appeared to exacerbate the problems. It has been found that individuals exhibited the lowest performance results and level of satisfaction when they worked "in unshielded areas characterized by high density, few enclosures, or low distance between workers" (Oldham et al., 1991: 936). These findings are consistent with the comprehensive research on privacy in the workplace undertaken by Kupritz (2001; 2000; 1998).

"Open-plan cubicles, primarily intended to increase communication, often have had the opposite effect because of privacy problems. That is, people actually communicate less when they cannot control communication. A pervasive mismatch exists between the universal privacy need for distraction-free work and the reality that most people work in 'distraction-porous' (Britt et al., 1999) workspaces. .... Privacy research during the 1970s – 1990s reveals that the inability to hold confidential conversations, lack of control over accessibility, the inability to avoid crowding, lack of autonomy over supervision, and distractions and interruptions can contribute to negative effects on job performance."

(Kupritz, 2003a: 123).

The ability to establish one's territory enhances the sense of control over the environment and the behaviour of others. "Just being aware that workplace interaction and setting can affect feelings of satisfaction and discomfort should be a plus for workplace managers" (Wollman et al., 1994: 192). The most important or desirable design features have been ranked by respondents as: having a large office; having up to date information technology in terms of computer equipment and phone lines; and having a workspace with floor to ceiling solid walls (Kupritz, 2003).

In 1985, The Buffalo Organization for Social and Technological Innovation (BOSTI) published a two-volume work entitled *Using Office Design to Increase Productivity* as the result of a seven year research program, establishing a clear relationship between workplace design and people's productivity and job satisfaction. New business trends have now emerged which have huge implications for how organisations operate, how people work, and how workplaces are being used. Based on a six year study entitled *Disproving Widespread Myths about Workplace Design*, (Brill et al., 2001) attempts were made to articulate the effects of such changes. It was suggested that the two most powerful design determinants of productivity and satisfaction are the near-universal need for distraction-free work and for learning-laden informal interactions. Widespread dissemination of such learnings has led to ad-hoc attempts to translate the findings into new facility design concepts with the capacity to provide a positive influence on critical organisational outcomes.

"The concept of 'workspace' has evolved within environmental psychology as a topic for research aimed at a new way of understanding the work environment through the interaction between workspace design, tasks and activities at work, and employee behavior" (Gustave et al., 2004: 131). To date, research in this area has focused on two areas of activity, these being the measure of the effects of environmental design on productivity and the measure of employees' perceptions of their workspace. This research (Gustave et al., 2004) demonstrated that the self-schema acts as a cognitive filter in the social dimension of sense of self factors that regulate both users' perceptions and users' evaluation of the work environment. It does not however allow us to get any real sense of the social order created in the workplace and highlights the need for a 'thicker' description of interaction as a way of comprehending the workplace environment. This does not appear to be possible through the examination of specific selected variables typical of the environmental psychology approach.

Canter (2002; 1998) explained how the optimistic 1960s gave rise to environmental psychology as a discipline and how a new generation of architects of that time wanted to produce buildings that took account of people's needs, not just the demands of architectural fashion or structural function. The exploitive 1980s he suggested saw a progressive loss of momentum in the activity and influence of environmental psychology but that new social confidence and inter-disciplinary collaboration has provided the basis for radical reconsideration of the relationship of people to their surroundings. Research must engage with the value system within which it operates and promote the building of ties and the creation of cross-cultural collaborative research (Canter, 1998; 2001; Gifford, 2002).

The principal organisation devoted to environment-behavior studies is the Environmental Design Research Association (EDRA) established in 1969, but as Mitchell (1993: 37) noted, "in the 30 odd years of involvement, they have had little success in incorporating environment-behavior research in the actual design task". Most of this work has been undertaken by non-designers (Mitchell, 1993). It is also always done in retrospect, after the fact, and often is used to rectify mistakes made in the preliminary stages. What is achieved through the NetWorkPlace™ study is a 'front-end' and 'on-going' approach.

The significant difference between the environmental psychology approach of utilising the post-occupancy-evaluation (POE) method and the NetWorkPlace™ study model, is that the POE analysis is performed under static environment-behavior conditions in evaluating how well the building suits the occupants' expectations. The NetWorkPlace™ model informs the design process through an analysis of the active organisational and social dynamics to elicit a clear understanding of all stakeholder needs prior to the commencement of any design or construction work. "POE's enable an evaluation of the environmental 'inertia' between buildings and users to be carried out once the space is occupied. From this, an outline of what is needed to be done to either adapt to or change an environment can be prepared" (Dovey, 1993: 266). This information can also be used in future designs of similar 'type' buildings.

In contrast, the NetWorkPlace™ study learns from an understanding of the 'dynamic', context specific, experiential processes required to be supported by the built environment.

## Design Methods

Two of the most influential figures in the early 1960s 'design methods' movement were John Chris Jones and Christopher Alexander. This movement as originally conceived, often led to a situation in which slavish adherence to design methods procedures removed all human thoughts and feelings from the design process. This was later termed by Jones himself as 'method over mind'. Alexander was later quoted as saying: "I cannot really conceive of a properly formed attitude toward buildings, as an artist or builder, or in any way, if it doesn't ultimately confront the fact that buildings work in the realm of feeling" (Mitchell, 1993: 52).

In 1977, Alexander and his collaborators published *A Pattern Language* which consists of 253 patterns, ranging from large scale urban applications down to small scale construction details. The basis of this approach is illustrated by his comments: "We must begin by understanding that every place is given its character by certain patterns of events that keep on happening there ..... The action and the space is indivisible ..... The two form a unit, a pattern of events in space ..... [but] this does not mean that space creates events, or that it causes them" (Mitchell, 1993: 53).

It is emphasised that this work constitutes a pattern 'language', but by no means the only patterns possible. Each pattern provides a resolution between conflicting requirements in that it proposes a certain design configuration in which those requirements can co-exist (Week, 2002). Coates and Seamon (1993: 334) reinforced this view of Alexander's idea of patterns as a guide by claiming that "before writing an actual pattern language ..... it is important to clarify the underlying philosophical assumption of the actual place." There is an inference then that each place may require its own pattern language. The philosophy behind the pattern language principal constitutes a fundamental challenge and the responses developed need to be incorporated into the approach to design that has emerged since modernism.

Through this radical transformation of the design process, the principal benefactors are the people most affected, the users. It is this residual message from 'design methods' and 'a pattern language', that of users being involved in designing and becoming empowered to help shape their own environments, together with the specific characteristics of each particular place, which informs the approach adopted in the NetWorkPlace™ study.

## From 'Product' to 'Process' Design

The signature architects who predominated in the era of modernism have been described as those who believed that their buildings were primarily works of art, and therefore could not be touched by criticism regarding function, environmental performance, etc. Louis Kahn for example was a fervent believer in the architect's ability to 'transform the life-style' of his building's inhabitants and users (Gutman, 1989). In Kahn's view, there are desires which only the architect can conceive of, over and above those expressed as needs by the client and prospective users. His belief was that the architect should fulfil these aspirations at all costs. This is a classic example of architecture being object oriented or product based. In such cases, the designers' view is in conflict with that of the users' who are concerned with how well a design suits their physical, functional, and social requirements.

This contrast highlights extreme ends of the spectrum of possible design objectives. One, driven by designer ego, is static and object dependent (product based) whilst the other, driven by user requirements, is dynamic and experiential (process based). John Chris Jones wrote: "As professionals ..... we are tied to thinking of the product as central and the users as existing only in relation to what we provide. We are here to help the others: what the others are for I've no idea. This is product thinking, the not always laughable weakness of industrial life" (Mitchell, 1993: 61).

Franz (1997: 74) noted that "Mitchell urges designers to shift their focus from the specification of form to the making of experiences". Whilst not being critical of the underlying intent of the message, she suggests however that the weakness in Mitchell's interpretative ideology is his "preoccupation with experience rather than the experience *of* something". This is attributed by Franz, at least in part, to his failure in making explicit the associated interpretive paradigm and in not exploring further what this means in practical terms.

It is suggested that the strategies available in qualitative research, the first-hand encounters with or within a specific context, are most able to describe the experience *of* something referred to above. This involves the gaining of an understanding of how people in real-world situations make sense of their environment and their actions. It acknowledges the role of interpretation in the 'lived experiences' and also in the collection and presentation of research data. Qualitative methods applied in this way, seek to describe or explain social and physical phenomena within complex contexts, and seek to consider the relevant

phenomena in a holistic manner (Miles & Huberman, 1994). Research and practice in this sense then become co-dependent, each being informed by user's experience of something uniquely inherent to them or their situation.

### **'Participation' in the Design Process**

Industrial democracy is a trend which took hold in Western Europe and even became part of the law in Sweden in the early 1980's. "Workers, whether they work in offices or on a production line, must be consulted on the design of their working environment before planning permission is given for a new building or before changes are made in existing buildings" (Kleeman, 1982: 603). This signalled a change in social management style. The regimentation of open-planned offices was replaced by industrial democracy and more choice for workers in the design of their workplaces.

It has been said that "interior designers traditionally have designed interior environments focusing on the needs of the clients, the person paying the bill, rather than the needs of the users" (Dumesnil, 1987: 7). Sundstrom (1986: 218) suggested that "personalization in the workplace may be indicative of the amount of freedom and control the organization allows the individual to exercise." "When employees are heavily restricted, they lose a feeling of personal control over their work, which increases stress, decreases satisfaction, and perhaps, decreases productivity" (Gifford, 1997: 303). Encouraging employees to take part in the space planning decisions provides them with an empowerment, which leads to not only better use of space but also ultimately saves money (Vischer, 1995).

The advent of the information society and the knowledge economy is radically changing the ways of working with a consequent need for a re-definition of the working environment. The overall philosophy of design of spaces for knowledge work should take on board the participation of users (Holtham & Ward, 2000). The briefing process is still the way to address end-users needs in a systematic way. However, when the project is driven by the client's or designer's individual concerns dominated by budget restrictions, time constraints, and the organisation's needs, space usability and suitability to accommodate business processes and social needs are often compromised (Kaya, 2004). It has been shown that designers often don't understand the business processes they are designing the spaces for (Alexander et al., 2004). The corollary is that managers don't always understand either the spaces they need or how to manage them once implemented. The only

solution to such a dilemma is 'participation' and 'collaboration' by all stakeholders involved.

Following his experience and the ultimate failure of 'design methods', John Chris Jones radically altered his own thinking and has been at the forefront of the 'participative' or 'user involvement' approach. "No longer is designing seen as a unitary activity for the planning of objects, rather the new and varied definitions of design reflect the multiplicity of possible outcomes of the design process and, more importantly, the way in which users' experiences are accounted for in the process" (Mitchell, 1993: 68). Comprehensive descriptions of contemporary, participatory style design processes as applied in the architectural and interior design disciplines are outlined in Mitchell's (1993: 67-69) *Redefining Designing*, and are thus not elaborated upon in detail herein. For the purpose of the NetWorkPlace™ study it is not so much the precise techniques employed by these processes, but the philosophy underlying the design trends which are relevant.

As a counter-action to the corporate downsizing experience of the last decade as well as rationalisation of buildings and spaces to reduce costs at the expense of employees' needs, a new trend toward the 'humanisation' of workplaces is now being observed in practice. The process which has come to be known under various labels as co-design, cooperative design, collaborative design amongst others, does not simply constitute the participation of users in the act of design nor does it imply collaboration among designers and other professionals in isolation. The principle is intended to encompass a means through which designers and non-designers alike participate as equal partners in the design process, shaping not only the outcomes but the aims of designing as well. Whatever the means employed by the various protagonists, all of these contemporary approaches involve 'the process of people's experience, not physical objects alone', as the motive in design activity.

Sanders (2002) suggested in relation to the industrial design discipline that the emergence of the 'user-centered' design process began in the 1980's and by the end of the 1990's the 'participatory design' culture developed to the point where the roles of social scientist and designer had become blurred. The user has become a critical contributor in the design process and the current incarnation is being labelled 'experience design'. The roles of designer and design researcher are becoming mutually interdependent and "the roles are converging to the point where they are blurring" claimed Sanders (2002: 6). "The new rules call for new tools" and "the new rules are the rules of networks, not hierarchies." (Sanders, 2002: 2).

The importance of context in today's approach to design is highlighted by Wilson (2002: 8) who claimed that "to make products that reflect a deep understanding of user/buyer needs we must truly understand that problems arise for humans in situations where they live, work and play – in other words in relation to a background." This is reinforced by Poggenpohl (2002: 69) who stated that "designers need to experience and understand the context in which their design is expected to work."

Frascara (2002: xv) suggested that "the design discipline has developed in recent years from an exclusive concentration on the design of objects, environments and communications toward an expansion of its field to include the design of processes, services, structures and systems." It is these contexts in the contemporary environment which map out the broad terrain within which design is expanding its influence. "It is imperative to look at the contexts within which design operates, and at the value systems design promotes, and see in design also the possibility to respond to a broader set of human needs" (Frascara, 2002a: 39).

Perhaps the most recent offering on participatory style design processes in relation to the architectural field can be attributed to Christopher Day's (2003) 'consensus design'. This approach builds on the tradition of participatory design in the sense that it is a socially inclusive process with roots which can be traced back to the socio-political convergence of the 1960's, underpinned by the notion of strong morality and social justice. It is a process engaged in by professionals but importantly involves users. These are most often affected or disaffected residents as the process appears to be most effective in a community planning context. Day (2003: 11) contended that the best and probably the only way to access the right information about places "is through the people who already live there. The knowledge they hold is invaluable. Invaluable both for living in places and for *forming* them." Of most noteworthiness in terms of the NetWorkPlace™ study is that the consensus approach embodies the principles of collaboration and partnership. Its methodology however appears to have some shortcomings in terms of practical application to design problems in the hyper-active world of corporations and commerce due mainly to the time required to undertake the process.

An important prerequisite for participation and employee involvement in workplace decision processes is that they need to be legitimised in order to go beyond the level of design rhetoric.



“the physical setting of work acts as a form of paralanguage, part of a communication system in which the explicit messages may be less important than the implicit, or symbolic, ones. The same thing can be said for the process of planning facilities, especially when the process is explicitly linked to corporate values and philosophies that are intended to promote empowerment, or in its older semantic guise, employee involvement. The concept, of course, is to empower employees by giving them responsibility and authority to make meaningful decisions about a variety of aspects of their work. .... [This includes] involving staff in decisions about the planning and design of the workplace itself. Many studies have demonstrated that involving employees in the decision process generates both better solutions and more commitment to carrying them out. The surprise for many managers is that involving employees does not necessarily extend, and may even shorten, the overall project process. There has to be real influence, though, not just going through the motions”.

(Becker & Steele, 1995: 163)

The information technology (IT) industry appears to be at the cutting-edge of innovations which are leading society's march into the twenty-first century. It seems logical then to look towards this field and others for lessons, inspiration, and examples of ways in which the architectural profession can continue to develop and serve humanity's needs and desires in the process of place-making.

With reference to the development of computer hardware and software, participatory design (PD) has been described an approach to the assessment, design, and development of technological and organisational systems that places a premium on the active involvement of workplace practitioners (usually potential or current users of the system) in design and decision making processes (Trigg & Clement, 2000). The IT literature confirms that the concept underlying participatory design traces its roots to Scandinavia involving work with trade unions in the 1960s and 70s and finds its ancestry also included in aspects of action research and socio-technical design.

A report on *Fostering Research on the Economic and Social Impacts of Information Technology* (CSTB, 1998: 43) stated that “theory (by Milgrom & Roberts, 1980), case studies (by Brynjolfsson et al., 1997; Orlikowski, 1992), and econometric/statistical analyses (by Brynjolfsson & Hitt, 1997) indicate that the effects of information technology depend significantly on other organizational factors such as organizational form and communications practices.” By extension, this includes the physical form and spatial relationships within contemporary workplaces.

Walldius (2001) has experimented with the usefulness of large-scale 3-D environments to complement traditional modes of information exchange and communication in large, distributed organisations. This research has achieved some positive responses indicating that there may be some potential for these types of applications to ‘connect’ physically dislocated people in real time in order to more

realistically substitute for face-to-face interaction by enhancing the video conferencing style facilities which previously had relied on a less sophisticated technology. The CSTB (1998) report concluded that it is becoming increasingly clear that the growth of technology is exceeding our understanding of its economic and social impacts. There is a recommendation that the most appropriate way of assessing the diverse outcomes in a variety of contexts of the growing use of computing and communications technology, can be best achieved by an interdisciplinary approach.

Many disciplines, including those of architecture, interior design, industrial design, and urban planning have now also embraced the principles embedded in the participatory approach. This has elevated the importance of closer collaboration between all stakeholders (including designers, owners, and users) in the design process. The principles espoused from within the information technology field, yield valuable insights for architects in relation to the 'collaborative' approaches emerging from within our own design discipline. To be true to the essence of the participatory design philosophy and in order to advance the cause, it is beholding on our own profession for architects to expose themselves to the knowledge, experience, and examples set by others such as has been provided by the industrial design field and the information technology industry.

It has been shown how designers can rely on social practice to simplify a technical implementation and also how they can design technical mechanisms to work toward a desirable social goal (O'Day et al., 1998). Such a claim must rely heavily on clearly understanding the context involved. Attwell (1998: 8) noted that one of the most common findings in prior studies of the impact of IT has been that "outcomes are far from uniform across all settings and contexts ..... The context or setting in which the same technology is used often produces strikingly different impacts ..... if we fail to [consider] this, we return to the old 'black box' paradigm, that is, attempting to measure only the input and the outcome without bothering with the context."

One of the most difficult ethical issues in any collaborative or participative design exercise must be related to decisions concerning who will/won't or can/can't be involved. The inclusion and/or exclusion of certain people and consequently their knowledge, frames all subsequent action by enhancing or limiting what can be known. Schneekloth and Shibley (1993) suggested that 'placemaking' is best done collectively within its own social and political context, irrespective of whether it is related to design, construction, or research,. To be effective, people involved in

social and environmental change must be involved in the process of generating knowledge about that change, in posing the issues to be resolved, in the implementation, and in the evaluation.

From the point of view of data, information, and knowledge available to the designer, the idyllic situation would be to have the maximum input available. For reasons of pure practicality or perhaps organisational politics, this will rarely be possible to achieve and perhaps impossible in a network context. Practitioners know that not every act of design can address all issues of the human condition for all those affected. For all acts of inclusion or exclusion there may be significant political and/or ethical ramifications. Schneekloth and Shibley (1993) pointed out that designers must have the courage to recognise and admit what they are unable to do, equally as much as what they are able to do.

Even though design could be considered to fall somewhere within the domain of practical reasoning it is nonetheless an emergent process. A full account of each operation performed during the act of designing would still not explain completely how a final solution was arrived at. "It is our view that the generative design process is indeed a 'subjective' process in the sense that it cannot be fully captured by rule-based propositions" (Groat & Wang, 2002: 104).

The design process in architecture is dependent upon the accumulation of knowledge which can only be obtained from context specific settings. This is combined with what may be termed a store of abstract knowledge applicable to many settings, in order to progress towards a design solution or in the case of research, empirical goals. Schön's (1983; 1991) seminal work in the area of action research when applied to designing, could be likened to a description of the architectural design process. The final solution is a result of the combination of many 'reflective actions', taken in response to factors which are unique to some specific, practical situation.

Groat and Wang (2002: 111) noted that this concept has its roots "in the work of the sociologist Kurt Lewin's notion of *field theory*, which basically holds that theoretical knowledge and practical knowledge must inform each other in a concrete context for the establishment of a true domain (field) of endeavor." It follows then that research 'about' the design process, particularly when undertaken in collaboration with other fields, can help inform design theory and practice itself.

### 2.9.3 Design from a Qualitative Research Approach

A clear indication of how qualitative research can inform the design process by cultivating collaboration to derive a framework for action, was provided by Groat and Wang (2002: 119-121) in their description of Charles Moore's St Matthew's Church project located in a suburb of Los Angeles. The ultimate solution allowed the design to emerge by collaborating with the congregation over a period of four months through an approach which reflects many of the characteristics of qualitative research.

These include having no pre-conceptions when entering a research venue and 'living' with the people a design is meant for in order to develop 'thick' accounts of how they perceive things. [Said Moore], "Being a part of making that church was an opportunity to work toward an architecture filled with the energies not only of architects but of inhabitants as well, and helping people to find something to which they can belong" (Groat & Wang, 2002: 121).

Dana Cuff (in Groat & Wang, 2002: 173) described in *Architecture: The Story of Practice* (1991), how she persuaded three Bay Area firms to let her observe and participate in the life of each firm over a six-month period. In each setting, she observed meetings, interviewed firm members, participated in casual conversations, and took part in many informal social activities. Throughout these interactions, Cuff maintained two important principles: one, that she should try to understand the dynamic of the profession from the point of view of the participants; and two, that at the same time such insiders' perspectives had to be balanced by her outsider's observations.

While Cuff insisted on grounding her work in empirical reality, she also highlighted the role of interpretation and meaning. As she put it: "Philosophically, what I value ..... is [a] rejection of positivist notions of the social world, embracing interpretation, meaning in context, interaction, and the quality of the commonplace."

These examples of architectural practice and research highlight fundamental principals aspired to by qualitative researchers, that is, the study of things in their natural settings, attempting to make sense of, or interpreting phenomena in terms of the meanings people bring to them.

## **Architect-as-Cultivator**

Within the scope of the NetWorkPlace™ study, the focus is concentrated on 'informing' the design process from both a theoretical and a practical viewpoint. The study acknowledges that architectural design practice within the complexity of the knowledge economy requires the utilisation of a range of expertise and knowledge from a wide variety of disciplines and sources. The general collaboration/participation by all stakeholders model is the appropriate process which was adopted as the model of designing, relevant to this study. Thus the design process includes participation by all stakeholders which may comprise designers, other relevant professionals and disciplines, clients, owners, and perhaps most importantly the users, all of whom adopt the principles of collaboration and participation as the appropriate design model in the context concerned.

In referring to design as a collaborative process, Linda Groat (Groat & Wang, 2002: 117-118) proposed that the role of the designer is best understood by considering the "architect-as-cultivator". This implies a shift away from the model of the architect as sole technician or artist towards a communal mission of well-being. This attitude towards the role of the designer was inspired by Barrett's (1998) organisation theory which embodies parallel characteristics. These include firstly, an emphasis on process by which Groat means the architect's spirit is collaborative and participatory. Secondly, it encourages a process of design wherein different disciplines contribute in concert to a final solution. Thirdly, the architect-as-cultivator motivates the process with "a sensitivity for the cultural as the soul of design." A strong sense of communal interest both within the design team and for the end user is inherent in this process. Groat (Groat & Wang, 2002: 118) insisted that a successful environment "can only be realized by fully engaging the social and cultural milieu in which it is embedded." For the purposes of the NetWorkPlace™ research context, Groat's proposal is extended to include organisational and technological to ensure that the workplace ecology is given consideration in its entirety.

### **2.10.0 The Architectural 'Fit'**

It has been suggested that "in the past thirty years, since the demise of Modernism, there have not been any unifying theories of design relative to social concerns in architecture" (Johnson, 1994: 52). In relation to the social aspect of architecture,

Johnson (1994: 57) posed the question: “How does architecture become the medium of social conveyance, comprehension, interpretation, expression; or is it merely the backdrop for society’s enactments?” In order to begin to find an answer to this, one must assume that there is a connection between society and architecture and the ability of architecture to fulfil this responsibility (Smith Capon, 1999). Johnson (1994) conceded that principles in architecture do seem to be time and culture dependent. Krufft (1994) made quite clear that in his opinion, the theory of architecture cannot be divorced from a consideration of its place in history.

“It would be possible to produce a more or less objective definition of the concept of architectural theory, but it would run the risk of turning out to be unhistorical, since it would assume a consistency of meaning that the term might not have; the criteria for such a definition quickly assumes a categorical character; that is, it would be taken as the measure of anything and everything that has been called, or has claimed to be, architectural theory. The longer one studies the subject the clearer it becomes that an abstract, normative definition of such a kind is both impracticable and historically indefensible.”

(Krufft, 1994:13)

Ozkan (in Abel, 2000: viii) postulated that the dilemma for any architectural theorist is to strike an acceptable balance between scope and content, generality and specificity – “an exercise which resists the imposition of any simplistic or exclusive framework.” This suggests that in architectural research, it is therefore perfectly legitimate to pursue as Chris Abel has done, an approach based on selected concepts and cases as opposed to striving after all-encompassing theories.

### **2.10.1 The Power of Persuasion**

Groat and Wang (2002: 84) cite Paul-Alan Johnson’s comments in regard to architectural theories often adopted in practice: “My own long standing concerns that what I hear, read, and see taught as architectural theory may not be theory at all in the sense of broad and all-encompassing generalizations about architecture [and] have led me to suspect that ..... what is called theory has more to do with certain arguments and ideas aimed at persuading others to particular beliefs and values.” The debate on whether design-oriented theories can be considered as theories at all seems to be based on the argument that they have fewer powers of prediction. The reason given is that traditionally, the claims of design theories tend to depend upon rhetoric and polemics and not upon empirically demonstrable proofs. Groat and Wang (2002) supported Johnson’s suggestion that architectural theories ‘are’ theories when they are capable of performing a persuasive function.

The power of architectural theory to persuade a wide audience and thus gain legitimacy in its own right becomes an important issue. Examples of some of the most enduring polemically formulated theories in architecture include those of Mies van der Rohe [Less Is More], Louis Sullivan [Form Follows Function], and Venturi's [Less is a Bore]. These are not scientifically describable but nevertheless captured the reverence of a cultural aesthetic, surviving the test of time and influencing generations of design practice worldwide.

### **2.10.2 The Notion of 'Lived-Space'**

Berleant (1991: 78) postulated that architecture consists most fundamentally of "the rootedness of a building in the ground and its social function [as] its basic and determining conditions." He (Berleant, 1991: 85) suggested that "traditional dualisms, such as those separating idea and object, self and others, inner consciousness and external world, dissolve in the integration of person and place."

In the notion of 'lived-space' then, space becomes the medium of human action. Within this notion however, the body must give recognition to the presence of 'others'. This can include other people or other objects. As Berleant (1991: 93) noted, "in the continuing formation of space and time in movement and in our reciprocal involvement with the objects and circumstances to which we are joined, we generate our human world".

Architectural discourse has traditionally revolved around debates involving questions of style, form, and function. But as Leach (1997: xv) argued, "architecture is the product of a way of thinking ..... attention needs to be focused on the thinking and considerations that inform its production". For the field of architectural research, this requires a re-interpretation of the boundaries. Architecture can be neither exclusive of, or in opposition to enlightenments gained through other disciplines. To ignore the conditions under which architecture is practised is to fail to understand the full social impact and importance of architecture. At a most fundamental level then, architects must be committed to a philosophy that engages with the human condition, a philosophy that asserts "the primacy of the lived-world of everyday experience as the field of scholarly inquiry" (Dovey, 1993: 248).

Lefebvre (1997: 145) reminded us that "the user's space is lived ..... compared with the abstract space of the experts (architects, urbanists, planners), the space of the everyday activities of users is a concrete one, which is to say, subjective." The

subjective experience of users must therefore be understood by architects and given priority in the design process. “Heidegger, Bachelard and others ..... offer a timely reminder that in an age of virtual reality, the very corporeality of the body cannot be ignored when addressing the experience of space” (Leach, 1997: 84). Heidegger’s (1962) philosophy emphasised that there is no being ‘apart’ from a world, there is only a ‘being-in-the-world’. ‘Being-in-the-world’ is anchored in lived-space, thus lending it an ontological significance. Merleau-Ponty’s insight that the body is a ‘figurative bridge’ between ‘being’ and ‘world’ space asserts that “the experience of ‘place’ is based in a primary relation of body to world” (Dovey, 1993: 248). The concept of ‘place’ thus has a central focus.

Successful environmental design should thus be driven by human values grounded in ‘lived experiences’, whose meanings in turn are found in the activities of everyday life. There is a need for architects to ensure the integration of human values and human experience in the design process. The NetWorkPlace™ study draws upon such a philosophical stance in order to understand the social order constructed through the meanings of everyday activities, combined with the sense of shared values and beliefs displayed by the activities associated with organisational group dynamics.

“The belief is that careful, extended looking at everyday meanings and events as people live and experience them leads to a more lucid picture of who and what we are as human beings. In this way the theories, models, and concepts of social and behavioral science may become more in touch with human meanings, actions, and experiences as they are in the world of everyday life” (Coates & Seamon, 1993: 331). This can be traced back to Norberg-Schulz (1980) who indicated that the value of such insights to the designer is that through them he or she may become more sensitive to human environmental experience and therefore create buildings and places more in tune with the essential nature of our humanness.

### **2.11.0 Multiplicity in the NetWorkPlace™ Study**

In the foreword to Duffy’s (1992) *Changing Workplace*, Professor Charles Handy asserted that the fields of management theory and the sociology of work are where more architects and designers need to reach. Handy commented that it is important that architects keep on ‘asking questions’ and warns that managers should not take their buildings for granted, but they should think about the framework they need for



the work they ought to be doing. He eloquently pointed out that “there is really no point in having the furniture arranged in optimal configurations - if the house is burning down” (Handy, 1985: 15).

The NetWorkPlace™ study component which represents the investigative fieldwork undertaken for this thesis, focuses on the everyday ‘office’ lives of people in and across organisations. It attempts to understand what ‘being-at-work’ means for those who find themselves spending a major part of their life within a network entity. “Organizational phenomena ..... should be explained by the kind of contextual interpretation used by an historian. Such interpretation would allow us to predict ‘trends’ with some degree of confidence. To add precise quantities to those trends, as in the physical sciences, would, however, be inappropriate and unrealistic” (Handy, 1985: 13). The NetWorkPlace™ study accesses the ‘stories’ and ‘interpretations’ of the members at the centre of the study context in an attempt to get an understanding of the ‘world view’ of the participants. After all, it is their perspective on ‘being-at-work’ which constitutes ‘reality’ in the study context.

In concluding this review, it is worth noting observations which suggested that the traditional view of organisational management is characterised by linear thinking, exemplified by clear causal models and simplistic, readily quantifiable measures (Linstone, 1999; Mamman & Saffu, 1998). It has been argued that measures such as cost benefit analysis and linear programming are typical of the search for the optimal solution. “It usually comes as a shock to those nurtured on this paradigm that complex living systems have not organized themselves in accordance with such an optimisation principle” (Linstone, 1999: 15). Accordingly, Linstone (1999) suggested that it is necessary to take a multi-perspective view of such a socio-technical system.

It is precisely this concept; that of multiple perspectives, different world-views, and contrasting priorities, upon which this thesis builds. Accordingly it accesses and incorporates the views of multiple users and importantly takes account of the various disciplinary participants in the workplace design process which were identified as relevant in the network context. These disciplines include not only architecture and interior design, but also management, information and communication technology, and sociology, from both a theoretical and practical standpoint.

The extensive literature review undertaken revealed, in terms of both theory and practice, that a substantial void exists in relation to workplace design in the network

context described at the beginning of this chapter. In response to this, the NetWorkPlace™ study investigation of a functioning commercial network enterprise was undertaken through a collaborative partnership arrangement with a large corporate project investigating supply chain innovation. Importantly, this provided access to the insights and contributions of other disciplines.

The opportunity to draw upon multiple intellectual perspectives in exploring the fundamental social, structural, technological, and spatial issues of separate organisational groups enabled triangulation of the facts of the case from several explanatory positions and alternative interpretations. The methodological basis underpinning the investigative, analytical, and explanatory components of the NetWorkPlace™ study are discussed in detail and fully established in Chapter 3, and further integrated throughout other relevant parts of the thesis development.

Chapter 1 INTRODUCTION

Chapter 2 LITERATURE REVIEW

**Chapter 3 METHODOLOGY:  
Establishing the Nature of the Inquiry.**

Chapter 4 CASE STUDY

Chapter 5 ANALYSIS - Network Dimension

Chapter 6 ANALYSIS – Local Dimension

Chapter 7 DISCUSSION

Chapter 8 CONCLUSION

## Chapter 3      **METHODOLOGY:** **Establishing the Nature of the Inquiry.**

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### **3.1.0      Introduction – The Methodological Challenge**

In approaching the task of investigating the NetWorkPlace™ study, inspiration was drawn from Rochfort (2002) who quoted the words of Nigel Cross (1979), the British designer and educator:

“The sciences value objectivity, rationality, neutrality, and a concern for the ‘truth’. ..... The humanities value subjectivity, imagination, commitment and a concern for ‘justice’. The designerly way of knowing involves a combination of knowledge and skills from both science and the humanities ..... Design has its own distinct things to know, ways of knowing and ways of finding out about them.”

(Nigel Cross as quoted by Rochfort, 2002: 160)

A major contribution of this study is the development of a ‘designerly way of knowing’ a new and unexplored phenomenon, that of the NetWorkPlace™. The following discussion establishes a robust theoretical approach to the investigation of a case of workplace design in the knowledge economy culminating in new understanding of the context, the development of a process of interrogation, and the creation of a solid platform for both current implementation in practice and for future research in the field.

No previously formulated, all encompassing methodological approach nor a complete system of discovery was available to apply to the investigation and analysis of the NetWorkPlace™ case study. The objective of this chapter therefore is to explore appropriate methods, concepts, theories, and paradigms in order to construct a valid and reliable process with which to interrogate and illuminate the NetWorkPlace™ phenomenon as a distinct case study in a new and unique context.

Specific details of the case and the investigative methods adopted are outlined in the description of the study and how it was operationalised (refer Chapter 4). Analysis of the data from both a ‘network’ (macro) and ‘local’ (micro) dimension are then fully explored (refer Chapters 5 & 6) prior to a discussion of the significant implications and the meanings derived from the NetWorkPlace™ being articulated.

As there was no direct precedent upon which to draw in the establishment of the methodological basis for this research, a case is presented herein for the

investigative approach adopted. This references and adopts principles from rich and long-standing traditions, whilst also incorporating refinements borne of contemporary thinking and context.

The outcome is a unique and valid methodology which encapsulates the dynamic world of the twenty-first century but remains grounded in traditional roots. The fundamentals of qualitative research underpin the NetWorkPlace™ study. Basic general tenets of the qualitative approach have not been included in the main body of this thesis, however a summary discussion is included as Appendix 3.1 for further reference

In the undertaking, this research reached beyond single disciplinary boundaries to access additional information and insights. The intention is that the new knowledge generated will similarly be projected beyond the boundaries of the design disciplines to inform others. In order to accommodate a broad spectrum of readers, it was felt necessary therefore to articulate the methodological basis from both a general and a case specific perspective in order for consistency and clarity to be maintained throughout.

The process of investigation was integral to the development of the NetWorkPlace™ specific methodology and thus relevant aspects of theory and method are further integrated throughout the remainder of the thesis where and when they are more appropriately located. This chapter thus serves to provide the foundation for the establishment of a valid and robust research approach, in short, establishing the 'nature of the inquiry'. The methodological contribution attributable to the NetWorkPlace™ study and emerging throughout the development of the thesis is consolidated in the final chapter.

The outcomes of the NetWorkPlace™ study suggest rather than a rigid 'methods' solution, that under-pinning principles to guide the design approach may be more appropriate to the range of contexts encountered. The techniques developed throughout the study are presented in this thesis as a 'suite of tools' which are directly applicable to, or are able to be adapted for the investigative phase of informing the workplace design process. These will also be relevant to other researchers or to practising architects and interior designers based on a case by case consideration. It is further anticipated that the techniques developed have the capacity to inform work undertaken by other disciplines in similar contexts.

### 3.1.1 The NetWorkPlace™ Perspective

This chapter outlines how the practice of empirical research in this case study takes account of the multiple realities which reflect the complexity of the modern world, and in this instance the dynamic social systems inherent in contemporary organisational settings. Burrell and Morgan (1979) discussed the incommensurability of the different research paradigms, however a growing acceptance, particularly in social science and organisational research, of multiple paradigmatic approaches has shown that different perspectives can add significant layers of 'meaning' without necessarily contradicting other views. The NetWorkPlace™ study shows that organisational reality in the described context, is infinitely more complex than a single perspective can reveal.

The social reality of multiple world views does not neatly fit into an operational process model of organisational life. It became apparent that the single grand narrative approach to the explanation of dynamic social systems was inadequate to provide comprehensive understandings in this study. Imposing an all-encompassing structural determinist framework, more akin to a positivist perspective, presumes that the social world will comply with such a position. The assumption that seems to proliferate in many organisational entities and which was certainly a finding in this case study, is that multiple realities can come together and co-exist towards a common, coherent purpose. What is important for the design disciplines is that due regard be given for or consideration of the social dysfunctionality and consequent implications which may ensue. It became obvious that rather than a mere slavish adherence to particular methodological rules, a more appropriate need was to identify the peculiarities of the research setting and through a thorough and robust investigation, ensure that the process was made explicit and of practical use to others. In short, clarity about, and accountability for what went on in the assembly and analysis of data from the field, resulted in a logical and rational path of discovery.

In attempting to develop a greater understanding of the social world, the NetWorkPlace™ study acknowledges that no one singular perspective, or even all of them in combination, can expose an absolute 'truth'. Relevant viewpoints can however provide the basis for undertaking practical actions within our world. All of the established social scientific approaches are characterised by their own particular ontological and epistemological assumptions about how the world is and how it can

come to be known or explained. The different perspectives must comply with the requirements for validity and reliability in order to be considered as legitimate social scientific approaches to research. These views then provide the framework through which the collection and analysis of real world or empirical data can be undertaken.

“We suggest that scientific approaches to understand the world can be distinguished from other approaches in two fundamental and interrelated ways. First, an approach that claims to be scientific ..... must demonstrably have empirical relevance to the world. An empirical relevance involves showing that any statements, descriptions and explanations used or derived from this approach can be verified or checked out in the world. Thus, second, a scientific approach necessitates the deliberate use of clear procedures which not only show how ‘results’ were achieved, but are also clear enough for other workers in the field to attempt to repeat them with the same or other materials and thereby test the results. These two criteria - empirical relevance and clear procedures - are bed-rock assumptions built into any scientific approach.”  
(Cuff et al, 1992: 4).

This chapter discusses the methodological approach adopted for the NetWorkPlace™ study and substantiates both its legitimacy and validity. The discussion following considers the complexity presented by the multiple realities of the identified ‘field’ of investigation, and together with the case study description (refer Chapter 4), establishes a sound methodological and empirical basis for the study.

### **3.1.2 Case Study Approach to the Built Environment**

The case study approach to research can be viewed as a conceptual or contextual container within which to undertake an investigation. Further to this, it can be used to frame one or more other complementary research methodologies. Robert Yin (1994: 13) provided the definition of a case study as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident.” The essence of the case study strategy is its focus on studying a setting or phenomenon embedded in its real-life context. In effect, the case delineates the boundaries of the study on at least one dimension.

In relation to research involving the built environment, perhaps the most compelling example in support of the case study approach is provided by Jane Jacobs’ *The Death and Life of Great American Cities* (1961). This was inspired almost entirely from her observations of everyday life in the city of New York and conversations with the people at the centre of the activity. Jacobs used the physical structure of New

York to frame her particular case (often contrasted against other locations e.g. Boston), in order to study the social dynamics of life in the city.

This classic work could be said to have provided somewhat of a benchmark for the use of the case study strategy in the architectural and planning professions, albeit on a relatively large scale. Jacobs (1961: 23) herself suggested that “the way to get at what goes on in the seemingly mysterious and perverse behavior of cities is, I think to look closely, and with as little expectation as is possible, at the most ordinary scenes and events, and attempt to see what they mean and whether any threads of principle emerge among them.” As Yin (1994; 2003) described it, the case study strategy implies much more than simply studying a phenomenon ‘in the field.’ Groat and Wang (2002: 346) suggested that “it involves studying a case in relation to the complex dynamics with which it intersects” [and interacts].

Groat and Wang (2002) outlined a case study entitled *Situated Cognition in Flexible Work Arrangements* undertaken by doctoral student Janice Barnes and presented as a PhD dissertation at the University of Michigan in 2001. Barnes wished to investigate “how can architectural design support the way project teams share knowledge in a 100% flexible workplace?” An extract taken directly from Groat and Wang (2002) and commentary on this work follows due to its significance in both substantive and methodological terms for the NetWorkPlace™ study:

“A combination of recent trends - including the globalization of markets, rapid growth of telecommuting and telecommunications, the shift toward collaborative work and project teams, and the increasingly flexible-assignment of office space, such as hot desks - has led many organizations to reconsider how they plan for and use their office environments. In some organizations, the changes have been so profound that it is unclear how, or if, ongoing work practices are being supported by the design of the physical environment .....

..... This new design standard for the workplace seems to serve the short-term interests of the project teams reasonably well, but interviews revealed that employees feel little, if any, attachment to the workplace and invest no energy in getting to know other employees within it.”

(Groat & Wang, 2002: 347-348)

Barnes’ study made it apparent that in her case, a ‘sense of place’ was non-existent amongst the workers. There also appeared to be no ‘sense of connection’ between members, or what might be termed a workplace community. Some conclusions can be drawn that the short-term, temporary nature of the project teams accommodated together with the complete flexibility of the workspace design influenced the outcomes. There were no clues given however as to whether these issues were of concern to members in respect to being-at-work.



The NetWorkPlace™ study takes particular account of the social dimension in order to better understand what form of physical environments may be required to support desired 'social' and preferred 'workplace' conditions. These aspects are investigated in parallel with the technical, functional, and organisational needs.

### **3.1.3 The Role of Theory in the Case Study**

Groat and Wang (2002) made reference also to Yin's recommendations regarding the role of 'theory' in the case study approach. It was suggested that despite the relatively open-ended and broad focus of the case study, the research design should be guided by theoretical development. "The complete research design should embody a 'theory' of what is being studied" (Yin, 1994: 27). The goal is to have a "sufficient blueprint for your study" (Yin, 1994: 28) that will suggest what data must be collected and what criteria should be used for analysing it. Fetterman (1989) claimed that theory is a guide to practice and that no study can be conducted without an underlying theory or model to help define the problem and a method for investigating it. In contrast to a purely grounded theory approach (Glaser & Strauss, 1967), this can be in the form of an explicit social theory or an implicit personal model about how the world operates.

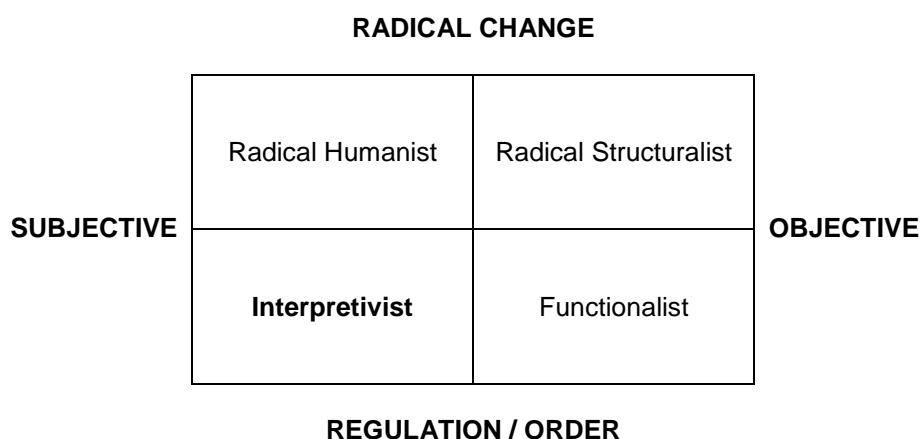
The role of social theory is to inform our thinking, to assist us in making research decisions, and ultimately help to make sense of the world around us. May (1997) suggested that "instead of descending upon the social world armed with a body of theoretical propositions about how and why social relations exist and work as they do, we should first observe those relations, collect data on them, and then proceed to generate our theoretical propositions." Theory thus both informs our view of the world and aids in the interpretation of empirical facts.

The 'point of departure' adopted for the NetWorkPlace™ study is underpinned by the social theory explicated by Castells (1996; 2000). The study also considers as part of its guiding theoretical framework the ideas of Mitchell (1996; 1999), Duffy (1997; 2001), and other contemporary designers and researchers outlined previously (refer Chapter 2). However, rather than the all encompassing theoretical position posited by Castells, the NetWorkPlace™ study investigation is contained within the boundaries of a specific case study. This encompasses the manifestation of globally oriented influences in re-contextualised, localised workplace settings.

### 3.2.0 The Methodological Terms and Tactics

In assessing the most appropriate methodology for the NetWorkPlace™ study it was imperative to comprehend what each system of inquiry could enable the research to reveal. Without presenting a full treatise on all of the possibilities, it is understood that qualitative research typically focuses on contemporary social and cultural circumstances and places an emphasis on understanding how people make sense of their own experience.

The interpretivist approach to qualitative research is characterised by both the ‘subjective’ dimension and by the sociology of ‘regulation’ or ‘order’. This paradigm dictates that explanation and understanding are sought through the realm of individual consciousness and subjectivity, with the frame of reference being that of the participant, as distinct to that of a mere observer of the social activity or phenomenon” (Burrell & Morgan, 1979: 227). Burrell and Morgan (1979), renowned theorists in organisational studies, argued that it is possible to analyse the different approaches to social theory in terms of two key dimensions. They suggested that assumptions about the nature of science can be thought of in terms of the contrast between the subjective and the objective dimension, and assumptions about the nature of society in terms of the contrast between regulated order and a radical change dimension. This then provided a basis for the categorisation of competing paradigms as shown below (refer Fig. 3.1).



(Source: Burrell and Morgan, 1979: 22)

**Fig. 3.1 Four Theoretical Paradigms**

The NetWorkPlace™ study acknowledged the radical structuralist views of Castells previously outlined (refer Chapter 2), but in order to understand how these were interpreted in a 'local' context, adopted an interpretivist perspective to investigate the phenomenon. Interpretivism is an approach 'grounded' in the world of the participants, affording primacy to the words and stories of the respondents 'lived' experiences. The focus on subjective reality is one of 'understanding the way in which individuals create, modify, or interpret the world' in which they exist, thus providing a way to understand the social order created by the members (refer Chapters 5 & 6).

"The empirical social world consists of on-going group life and one has to get close to this life to know what is going on in it ..... The veils are lifted by getting close to the area and by digging deep in it through careful study. Schemes of methodology that do not encourage or allow this betray the cardinal principle of respecting the nature of one's empirical world ..... The merit of naturalistic study is that it respects and stays close to the empirical domain."

(Blumer as quoted in Patton, 1990: 67)

It may be argued that an individual researcher's choice of a particular research design is necessarily framed by the researcher's own ontological assumptions about the nature of reality and epistemological assumptions about how one can come to comprehend it. Broadly speaking, these two assumptions in combination determine the system of inquiry (or paradigm) which conveys the notion of a specific world-view. In a social or cultural context, the emphasis is often placed on very detailed and in-depth descriptions "as in Geertz's idea of thick description" (Groat & Wang, 2002: 74). This does not necessarily result in an ultimate and enduring truth but it does provide the means for a particular perspective of understanding to be explored.

### **3.2.1 The Colour of the Lens**

Qualitative data provides a source of well grounded, rich descriptions and explanations in identifiable contexts, helping to generate or revise conceptual frameworks. In short, the findings from qualitative studies can have according to Miles and Huberman (1994: 1), "a quality of undeniability ..... [words], especially organized into incidents or stories, have a concrete, vivid, meaningful flavor that often proves far more convincing to a reader – another researcher, a policymaker, a practitioner – than pages of summarized numbers."

From the outset, the aim of this discussion is to establish a transparency of logic, to state precisely the ontological position of the NetWorkPlace™ study, and to clearly outline the epistemological pathway which allows the participants reality to 'come to

life'. This can only be achieved by making explicit the philosophical orientation of the study and by clearly outlining each of the processes followed throughout; from problem identification, to data collection methods, the techniques used in the data analysis phase, and throughout the ensuing discussion. By diligently following such an approach, referred to here as establishing the 'colour of the lens', an attempt is made to ensure that there is no doubt as to both the source of the data and the authenticity of the findings in the context of this case.

As Smith (2000: 218) noted, "..... we come to understand a situation through a philosophical position, which integrates an ontology, epistemology and associated methodology; in turn 'the doing' involves particular methods of investigation for 'making sense'." The methodological discussion presented herein sets the framework within which the study was progressed. It takes full account of the investigation into the substantive facts together with the conceptual claims revealed through the literature.

In order to provide a credible account of the research undertaken, it is necessary to firmly establish how the shape of the social world is construed in this case. An underlying premise in this research resides in the belief that social phenomena are a construction in the minds of participants, but that this occurs within an objective reality that does display some regularity, some structure, some relationships, and some patterns, all of which are influenced by the particular context.

Such an acknowledgement of objective reality merely recognises the institutions, laws, practices, and conventions created by society which form the framework for action. These social structures are viewed not as determinants of activities in the positivist sense, but more appropriately as either the constraints or enablers for a variety of subjective interpretations which constitute 'meaning-making' at the center of social life. In the NetWorkPlace™ study, such meaning is assumed to be embedded in what people *say* and *do* in their everyday life experiences and surroundings.

### **3.2.2 Interpretivism and Design**

The management literature suggests an "organizational system is modified by two elements: the objective structure of the organization and the value structure of the workers" (Moleski & Lang, 1982). There is little empirical evidence however to support that this relationship has been comprehensively embraced by either

designers or managers, nor that it has been substantially embedded in the considerations of the practical workplace design approach.

The NetWorkPlace™ study places a particular emphasis on understanding the relationship between the experiencing subject and the context experienced. This refers to the objective and subjective dimensions of structure and the value systems displayed by the different participant categories of managers and workers within the study.

Based on the discussion regarding the nature and purpose of architecture (refer Chapter 2), that is, that architecture's primary grounding should be embedded in human experience, then the world-view represented by interpretivism is particularly compatible with the objectives of the architectural design process. It has also been shown through the previous discussion (refer Chapter 2) that historically there has been a separation of office design from user involvement.

In response to this, Mitchell (1993: 35) pointed out that "the inadequacies of the design professions have become increasingly obvious over the past three decades and a range of disparate approaches has developed in an attempt to make designing more responsive to design users." These approaches include: man-environment relations; environment-behavior studies; environmental psychology; and design methods and its offshoots. Collectively, these have constituted the major part of the design research effort. The problem, Mitchell (1993) added, is that design research has been conducted by 'others', remote from the traditional design professions.

The more contemporary approaches to architectural, interior, and industrial design now consider that "design research should be concerned with ..... the seeking of new ways of life ..... how we wish to live in a post-industrial era, as opposed to the way we were compelled to live in the industrial age" (Mitchell, 1993: 35). "No longer is designing seen as a unitary activity for the planning of objects; rather the new and varied definitions of design reflect the multiplicity of possible outcomes of the design process and, more importantly, the way in which users' experiences are accounted for in the process" (Mitchell, 1993: 68). What is becoming a fundamental shift in the approach to design is a change in focus from 'product' to one of 'process'. Rochfort (2002: 159) suggested that "although design obviously engages with aesthetic considerations, its primary *raison d'être* is not located around the maker of the design but rather in its 'end user' ..... in many respects design now occupies a

'third area' between the humanities and science." Design is no longer simply the construction of environments, graphics, products, services, and systems, but a means for people to act, to realise their wishes and satisfy their needs. Frascara (2002: 33) claimed that this "requires a better understanding of people, of society, and of the ecosystem, and calls for an interdisciplinary practice." He further suggested that "the nature of each problem might suggest the spectrum of disciplines required to understand it " (Frascara, 2002: 36).

This is the basis of the argument against the previous 'rational design' attitude which tended to reduce architecture to measurable effects and results, and also the 'reductionist' tendency to design according to predetermined abstract concepts. The design approach is not an end in itself, but rather it becomes a means to an end and constitutes what may be termed as the design strategy. The adoption of techniques which have been developed within the interpretivist framework (Maxwell, 1996) are thus considered to be the most appropriate methods of inquiry to be employed in 'informing' the design process.

Groat and Wang (2002) have suggested that well-known architects such as Charles Moore and Christopher Alexander are among those who have used qualitative research tactics to actively engage their clients. In architectural terms, these are perhaps best represented as collaborative and participative design approaches to practice which give recognition to the experiences of and the knowledge created by 'users' and others in the process of making sense of their surroundings. Such an approach displays resonant connections to the principles of qualitative research. Typically, the collaborative approach requires an open attitude to be adopted by designers and an abandonment of all predetermined biases about what the final design form ought to be.

The major strengths of qualitative research lie in its capacity to uncover and absorb the rich qualities of life circumstances and settings. It is also able to be flexible in its design and procedures allowing for adjustments to be made if necessary as the research proceeds and data emerges. As such it is especially appropriate for understanding the meanings and processes of people's activities and artifacts.

### **3.3.0 Research Strategy**

Research strategies provide different ways of answering research questions (Blaikie, 1993; 2000). Each strategy is underpinned by a philosophical ancestry and

a theoretical foundation. Each includes ontological assumptions about the nature of reality and epistemological assumptions about how that reality can come to be known (Kumar, 1996; Neuman, 1997; Punch, 1998; Marshall & Rossman, 1999).

The most common research strategies utilised to date have adopted either a deductive or an inductive approach. The deductive strategy follows a path from general laws to a specific case and is commonly referred to as theory testing. The inductive strategy flows from a specific case and/or collection of observational data to arrive at generalisable laws and is commonly referred to as theory generating research. Deductive research within the positivist tradition appears to have been the dominant approach in the field of business logistics/supply chain management which is the over-arching context within which the NetWorkPlace™ study was undertaken. This trend is in many ways ironic as deductive logic is most suitable for testing existing beliefs in the development of theory.

What is necessary within emerging fields of endeavour suggested Gyongyi and Spens (2005), is the generation of new insights, knowledge, and theories. Stock (1997) suggests that borrowing theories from other disciplines and conducting research within a philosophical framework that enables a range of views to be accessed may be the most beneficial way of advancing knowledge in this field.

Abductive reasoning is said to have been first coined by Charles Peirce (1931) and since been adapted by many different disciplines all of which have developed the approach further to suit their own needs. Abduction is seen as systematised creativity in research, deemed necessary in order to break out of the limitations of deduction and induction, leading to the development of new knowledge often involving intuition that results from unexpected observations which cannot be explained using established theory (Taylor et al., 2002). Abductive reasoning can also be applied in a more structured but nonetheless creative way by re-contextualising phenomena with the aim of gaining understanding from the perspective of a new conceptual framework (Peirce, 1931; Danermark, 2001). An abductive approach can thus lead to new insights and knowledge about existing phenomena by examining them from a new perspective.

### **3.3.1 Abductive Logic**

In this case the workplace design component has been identified as an integral supporting mechanism of the supply chain management task (refer Chapter 4). This

created a need to investigate the traditional workplace setting in a re-contextualised environment, that is, one of inter-dependent networked organisations cooperating and collaborating towards common goals. As mentioned previously, inductive and abductive approaches both aim at developing theory whilst the deductive approach is most appropriate for theory evaluation or testing. Inductive research traditionally results in the generalisation of findings from empirical data.

The primary aim of an abductively driven approach, which is concerned with the particulars of a specific case, is to discover and develop understandings of 'new' phenomena and is thus the appropriate strategy to adopt for the NetWorkPlace™ study. In order to compile a rich picture of the case being studied, the collection of data from a range of different sources as outlined in the case study method of Yin (2003) has been applied in the NetWorkPlace™ study.

For Interpretivism, the social world *is* the world interpreted and experienced by its members, from the 'inside' " (Blaikie, 2000: 114). Ontological assumptions associated with the abductive strategy adopt the view that reality is the construction of social actors. It involves a complex combination of socially derived mutual knowledge involving meanings, cultural symbols, and social institutions, interpretations of which both facilitate and structure social relationships. Social reality *is* the world of meanings and interpretations.

The epistemological assumptions of the abductive research strategy regard social scientific knowledge as only being able to be derived from the everyday concepts and meanings, from the socially constructed mutual knowledge of the members of the community under investigation. It is necessary for the social researcher to 'enter' the everyday world of the members in order to grasp these socially constructed meanings. At one level, the accounts produced by the researcher are redescriptions in social scientific language of the social actors' everyday accounts and at another level, these can be developed into theories that go beyond everyday knowledge.

"A focus on the ways in which the 'ordered' nature of social life is organized is something all sociological perspectives have in common" (Cuff et al., 1992: 26). Some focus on the 'problem of order' at a whole of society level. That is to say, the activities and relationships produced are seen to be the result of or at the very least to be greatly influenced by the organisation and structure of the whole of the society in which we live. One particular perspective however, takes issue with all other



approaches, “by claiming to study what they all take for granted or in some cases completely ignore, namely the detailed study of the common-sense methods by which we all, sociologist and layman alike, make sense of our social world” (Cuff et al., 1992: 13).

This is the technique of the ethnomethodologist who adopts a distinct focus on persons, language, and social encounters. What is being done, by whom, and for what purpose, are all matters which social actors make sense of in producing their own actions and in responding to the actions of others. From this point of view then, the meaning and understanding that participants in a particular social situation have of what that situation is and what their place is within it, are not incidental to social life, they create or constitute it.

Harold Garfinkel’s (1967) ethnomethodological tradition argues that reporting everyday accounts is all that is possible or necessary in order to understand social life. Erving Goffman (1963; 1971) extended such accounts into social scientific descriptions of the way of life of a particular social group. Whatever the orientation however, all proponents of this view insist on keeping their descriptions tied closely to the social actors’ language (Sacks, 1992; Goffman, 1981).

The fundamental ideas of this frame of reference originate from the work of Max Weber (1947). “Weber argued that sociology could have no legitimate methodological foundation unless it grounded its methods in a clear conception of the relationship between meaning and action” (Cuff et al., 1992: 142). Weber’s ‘*verstehen*’ (understanding) methodology required however, the construction of ‘ideal types’ to bridge between subjective understanding and objective explanation. The pioneering work by Weber was a significant influence on the social behaviourism of G.H. Mead, the phenomenology of Edmund Husserl, and the later developments by Alfred Schutz, all of whom placed a particular emphasis on the role of ‘language’ in social life and the unconscious routines by which people manage their interpersonal contacts (Bullock & Trombley, 1999).

Gephart (1998: 160) suggested that “an interest in human cognition and sense-making practices has been rekindled and linked to the social construction of organizational realities.” This has particular relevance for the NetWorkPlace™ study’s organisational context and methodological approach by the further assertion that case studies are particularly useful in such circumstances because they enable the examination of multiple theoretical implications in a single study.

The following discussion elaborates upon the methodological basis of the NetWorkPlace™ study approach by detailing the methods employed and consolidating the philosophical underpinning of the world-view adopted in this case. In terms of the foregoing decision to adopt an abductive logic of inquiry, the investigative and analytical component follows an ethnomethodological approach in order to access the understanding and meaning-making methods of the study participants.

### **3.3.2 The Ethnomethodological Influence**

Ethnomethodology as a research approach developed to the point of being regarded as central to any account of the contemporary sociology of action (Cuff et al., 1992). Although it remains a coherent and substantive body of empirical work in its own right (Hilbert, 1992), the traditional ontological position is extended in the case of the NetWorkPlace™ study as a suggested way of expanding the research horizon. This is considered necessary when confronted by the re-contextualised phenomena presented by the knowledge economy in order to add to knowledge in both substantive and methodological terms.

Ethnomethodology is a term coined by Harold Garfinkel for the sociological study of everyday activities, however trivial, which concentrates on the methods used by individuals to report their common-sense practical actions to others in acceptable rational terms (Bullock & Trombley, 1999). This process of imposing a rational scheme onto what are essentially practical activities is referred to in the terminology of the ethnomethodological language as 'practical reasoning' which assumes that the social world is being constantly created by members of society and is seen as the result of members using their taken-for-granted, common-sense knowledge about how the world works. Ethnomethodologists suggest that everyday, mundane social activity is the product of complex, methodic practices. Much of the effort expended to uncover these methods is directed towards the analysis of transcriptions of natural conversations. This is based on the belief that members constitute their social encounters in, by, and through such talk.

In describing ethnomethodology, Silverman (2001) stated that "just because something seems 'pretty routine', we cannot assume that it is not difficult to explain." In order to understand routine activities, Sacks followed the lead of his teacher Garfinkel (1967) in attempting to explain 'common sense' as a topic in its own right.

Ethnomethodology, literally translated as 'member's methods', "seeks to describe methods persons use in doing social life" (Sacks, 1984: 21). To illustrate this, Sacks (1992 Vol I: 437) suggested that members should be seen not as "coming to terms with some phenomenon", but as actively constituting that phenomenon.

Ethnomethodology gained recognition with the publication of Harold Garfinkel's *Studies in Ethnomethodology* in 1967. The two major influences on Garfinkel's ideas can be attributed to Talcott Parsons' dealings with the problem of social order and the phenomenological writings of Alfred Schutz. For Schutz, the foundations of sociology were to be located at the level of action of the actor's daily world of experience and in this respect he was greatly influenced by the phenomenological philosophy of Edmund Husserl, especially his concept of the natural attitude of daily life.

"In Schutz's view ..... the social world is experienced as a common, shared world in which the individual is personally involved. The common, 'objective' nature of everyday life is something taken for granted by all of us as social actors. We expect others to know what we are talking about, to see what we are seeing. But we also take it for granted that the ways we are involved in this common world are, at least in some respects, particular to us. For Schutz, then, the 'objective' and the 'subjective' are dimensions of the actors common-sense perspective ..... The social world, says Schutz, is experienced as a 'given' world, that is, it is organized, orderly, 'out there'; it is independent of, and pre-exists any particular individual. The 'given-ness' of the world is ..... treated as an unquestioned and unquestionable fact."

(Cuff et al, 1992: 169).

Being-in-the-world has to be made sense of by each of us in terms of our own particular experiences. The way we do this is by utilising what Schutz called 'common-sense knowledge'. This concept refers to the knowledge each of us possesses by virtue of living in and being part of the ordinary, everyday world. All members of society are presumed to possess a stock of typifications. These enable each of us to see the everyday world as familiar, ordinary, and mundane, "the existence of typifications make it possible for the actor to treat his social environment as 'known in common', that is the same for others as for himself" (Cuff et al., 1992: 171). Thus, the common-sense perspective of the everyday social actor is essentially a practical perspective, dealing in everyday activities. King and Kraemer (1998) indicated that all social phenomena must ultimately be understood in ways that account for individual action, "no matter how extensively mediated or channeled by higher level social forces or conditions of the natural world" (King & Kraemer, 1998: 189). This implies that we each experience and interpret things in our own way, but maintain a sense of social order due to common understandings.

### 3.3.3 The Local Production of Social Order

“Ethnomethodological studies analyze everyday activities as members’ methods for making those same activities visibly rational and reportable for all practical purposes” (Garfinkel, 1967: vii). Garfinkel’s (1967: 1) approach was to “pay to the most commonplace activities of daily life the attention usually accorded extraordinary events”, and in that way, “seek to learn about them as phenomena in their own right.” From an ethnomethodological perspective, social facts are accomplished through the interpretive work of members, that is, the activity which produces and organises everyday existence (Sacks, 1984).

Holstein and Gubrium (1994) discussed Parsons’ concept of social order as being made possible through institutionalised systems of norms, rules, and values. Garfinkel’ s model of social order is built through the contingent, embodied, ongoing interpretive work of ordinary members of society, who make reference to the rules, values, and principles as sense-making devices. Ethnomethodologists believe that objects and events become meaningful only when situated within a context (Denzin & Lincoln, 1994).

An important prescription of Parson’s theory was that actors’ understandings were framed by the ‘common culture’. He assumed that actors complied with the normative constraints of society. Garfinkel diverged from the Parsonian condition and took the radical step of proposing that actors’ understandings were ‘constructed from within’. He conceived of social order as ‘participant produced’. “Whatever recognizable features an activity or setting displays should be seen as ‘locally’ produced.....in and through the ways the activity is being done by those engaged in it” (Cuff et al., 1992: 173).

Julian Orr’s (1990) case study involving Xerox Corporation technicians indicated the relevance of understanding the grass roots, local production of social order amongst members of a large organisation. This ethnography provided a quite different picture of ‘reality’ than may have been constructed simply from an examination of corporate documents and policies and advice from management levels within the corporation. One of the significant findings was that technicians never relied totally on the company-provided service manuals when troubleshooting machine problems. They relied on ‘war stories’ passed from technician to technician in an oral storytelling culture.

Lindahl (2004) suggested that the individuals active at the workplace develop their own words, language and culture. An architect has a professional language concerning the work environment and both metaphoric and symbolic aspects which involve terminology that is not generally used and often not understood by individuals at their workplace. Employees use a local language with its own nuances, in which the workplace is a complete experience, to describe their everyday work. It is this idea, 'the local production of social order' which is the key in the ethnomethodological perspective and which marked it as an appropriate method for the NetWorkPlace™ study to investigate design in a situational context which has not herebefore been investigated, or at least reported upon in any comprehensive way.

Garfinkel proposed that the realities of social life could be conceived as consisting in, and only consisting in, members' understandings (Cuff et al., 1992). For the ethnomethodologist then, social settings are seen as ongoing accomplishments of the interactional 'work' which the members of a setting or event are continuously engaged in. Rather than a theory or explanation of social life, ethnomethodology is more commonly conceived of as a programme of empirical inquiry. An indisposable aspect is the central role of the 'members'. In assigning this term, the implication is that actors have membership of a particular collectivity and further implies the possession of a shared stock of knowledge within the group about their common world.

Reflexivity, a term often used in Garfinkel's work highlights the importance of shared knowledge in explaining social action. By this he means that "the ways members refer to the perceived features of a setting or event are - from a sociological point of view - part of the setting or event they describe. .... It is not just the description someone gives that may indicate how an event is understood, but also the response which giving that description elicits from others" (Cuff et al., 1992: 175). Actions are thus part of or are embedded in the situation of interaction between members in context which can be linked directly to the work of Erving Goffman.

### **3.3.4 The Interaction Order**

Goffman (1967) believes that the organisation of social interaction can be studied as a phenomenon in its own right, referring to this as the *Interaction Order*. He views individuals as self-conscious beings and following the principles established by

Mead, regards “social behaviour as essentially communicative, involving the ability to project and interpret socially defined attitudes and actions” (Cuff et al., 1992: 159). His work also illustrates that the presentation of self in everyday settings involves teamwork, whereby the maintenance of ‘impression’ is often the outcome of the behaviour of a number of people (Goffman, 1959). This has particular relevance for office and workplace settings which often contain both ‘shop-front’ and/or ‘behind closed door’ activities.

Goffman views the relationships between individuals as a set of interactional rituals through which the self is expressed. His concern is to “subject these interactional phenomena to close and detailed study, thereby showing that social order can be found at the level of mundane, everyday behaviour” (Cuff et al., 1992, 162). Radley’s (1996: 82) interpretation proposed that “in any relationship, *individuals have an obligation to maintain face*. Social encounters involve those concerned in acting out a line, a pattern of verbal and non-verbal acts through which each person expresses his or her definition of the situation.” Goffman (1970) argued that social interaction can only proceed if the participants ensure that a particular expressive order is maintained, referring to the regulation of the flow of events that bear upon the maintenance of face of both parties.

The application of concepts pertaining to the ‘interaction order’ (Collins, 1988) were pivotal in making sense of the interactional activities investigated in the NetWorkPlace™ study. They facilitated an understanding of the implications of social transactions both within and across the different settings and groups encountered (refer Chapters 5 & 6).

### **3.4.0 Application to Workplace Studies**

Based on the interpretivists beliefs, conversation itself is one of the most common of social activities. It should not be surprising that when members do other kinds of ‘talking activities’, such as might be experienced whilst ‘being-at-work’, that resources derived from or similar to those used in producing ordinary conversation are employed. Cuff (et al., 1992: 187) points out that “Garfinkel refuses to assume that we can know in advance what sociological features an activity might possess”, irrespective of what the activity might be .....[he seeks to focus on] the ‘this-ness’ of the activity, in order to discover how it is accomplished as the recognizable, ‘real’ activity it is”. What is emphasised however through Garfinkel’s approach, is that in

studies of a 'work' context, the activities of practitioners in those settings are indeed 'ordinary'. It is the taken-for-granted practical competencies of the members engaging in 'work' activity, with a sense of shared knowledge and understanding, that the ethnomethodological orientation of the NetWorkPlace™ study sought to discover, describe, and explain.

Throughout the 1990's a growing body of research, commonly known as 'workplace studies', concerned with the organisation of work and interaction in complex technological environments emerged (Bolzoni & Heath, 1997 cite studies by Goodwin & Goodwin, 1996; Harper, 1996; Heath & Luff, 1996; Suchman, 1996; Greatbatch et al., 1995; Heath et al., 1995; Whalen, 1995; Hughes et al., 1992). In those settings, events and activities depended upon a high degree of teamwork for their accomplishment. "An important part of the richness and rigour attributed to studies of in situ social actions and activities, derives from their continuing commitment to demonstrate how participants themselves are orienting to each other's conduct. Building an analysis with regard to the sequential and interactional character of social action and activities remains a critical resource" (Bolzoni & Heath, 1997: 4).

Bolzoni and Heath (1997), from the School of Social Studies at the University of Nottingham, have provided a significant study of the *Interactional Organisation of Workplace Activities* using an approach informed by ethnomethodology and conversation analysis. Their work, cited due to its relevance in both contextual and methodological terms for the NetWorkPlace™ study, focuses on socio-interactional organisation of activities within workplace environments and contributes to the growing body of research which in recent years has come to be known as 'workplace studies'. They report that much of this research draws in various ways from an ethnomethodological approach which places the 'in-situ' accomplished and socially organised character of practical action at the forefront of the analytical agenda relative to workplace investigations. This relies heavily on the use of conversation analysis, utilising either audio and/or video recordings of 'naturally occurring activities', supplemented by field-work data collected through non-participant observation, techniques used extensively in the NetWorkPlace™ study.

It has been generally recognised that recordings of human activities, despite their limitations, provide researchers with comprehensive access to social action allowing the complexity of particular events to be subjected to detailed and repeated scrutiny. As Atkinson and Heritage (1984: 4) suggested, "in sum, the use of recorded data

serves as a control on the limitations and fallibilities of intuition and recollection; it exposes the observer to a wide range of interactional materials and circumstances and also provides some guarantee that analytic considerations will not arise as artefacts of intuitive idiosyncrasy, selective attention or recollection, or experimental design.” Studies of talk and interaction have become increasingly concerned with more specialised forms of human activities, often arising within particular organisational or institutional domains. It has been acknowledged by researchers that “in settings where activities require extensive specialised knowledge, analysis necessitates extensive field-work and local expertise in order to begin to delineate the organisation of the participants' activities” (Bolzoni & Heath, 1997: 4).

By extension, the design of physical environments to support particular work practices and interactions also requires designers to accumulate a rich store of knowledge such as that which is acquired by extensive field-work in a specific context, combined with professional expertise and local knowledge. The NetWorkPlace™ study was modeled on such an approach, with extensive periods spent in the workplace settings under investigation and in interview sessions with respondents. This was combined with professional design expertise and additional knowledge and insights being provided by other relevant disciplinary researchers.

Through their work, Bolzoni and Heath (1997) have shown that the ethnomethodological approach and conversation analysis can contribute to workplace studies in three distinct areas related to research and define these as the ‘empirical’, the ‘conceptual’, and the ‘methodological’. In particular, they claimed that ‘workplace studies’ have generated a substantial body of findings concerning the social and interactional organisation of collaborative work. They confirmed that these studies have delineated ways in which collaborative work relies upon social organisation, that is, the seen but unnoticed practices through which work and interaction are accomplished on a daily basis.

‘Workplace studies’ provide detailed naturalistic examples of the in-situ organisation of practical conduct in particular workplace domains and have begun to delineate both the local and the generic features of work in organisational environments. Collectively, they have established a framework for the investigation and analysis of workplace domains which require the design and implementation of both specific environments and systems to support organisational conduct.



Drawing on the techniques of ethnomethodology and conversation analysis, workplace studies have demonstrated how the in-situ accomplishment of specialised tasks is dependent upon a social and interactional organisation which inform the production, intelligibility, and coordination of the tasks (Bolzoni & Heath, 1997). These studies have further illustrated how users rely upon a body of common sense knowledge, reasoning, and tacit organisational resources. Bolzoni and Heath (1997) drew attention to the debate on whether it is methodologically feasible to develop a design or requirements 'method' based on the use of ethnomethodology and conversation analysis. Such discussion has centred principally on how workplace studies should inform the design, development, and deployment of technologies to support collaborative work (Jirotko & Goguen, 1994).

This thesis responds to the issues raised in the argument through the formulation of a 'model of inquiry' which informs the workplace design process for physical environments in a network context. Importantly however, it does not advocate a singular, prescriptive 'method', but a suite of tools and techniques which can be adapted to the case in hand.

### **3.5.0 Methodological Orientation of the Study**

The NetWorkPlace™ study in both its inquiry and analysis modes, focused on the conversation and activities of people in order to gain an understanding of the constructed social order of being-at-work in a networked community. Further to this, the objective or structural aspects of the organisational partners in the supply chain were examined. Collectively, this approach provided the ability to identify links and issues associated with the built environment.

Armed with this understanding, it is not unreasonable to expect that the professional designer is better equipped to facilitate the creation of a socially and organisationally supportive environment. The implications that this had for the investigation relate directly to the fact that the ethnomethodologist is described as being concerned with activities rather than actors. Ethnomethodological studies inquire not only into meanings but also into the work which makes meanings possible, how such meanings are 'locally' managed and the methods by which members in the setting accomplish the here-and-now practical relevance of their understandings.

Irrespective of whatever other labels may have been assigned to them over time, for the purposes of the NetWorkPlace™ study, it is argued that Goffman, Garfinkel,

and Sacks can legitimately be grouped into a single category as 'Theorists of the Interaction Order'. The notion of the 'interaction order' is here differentiated from other sociological approaches because of the way that actors construct a social order through a shared knowledge of their common-sense social world.

Through their extensive writings, Goffman and Sacks in particular have adequately demonstrated that the investigation of social interaction from this perspective constitutes a substantive domain within the field of social inquiry. The idea of an existence of Goffman's (1981) social order at the level of everyday action has been utilised by Adkins (1997) to account for and explain everyday practices of youth activities in theatrical settings and importantly for the NetWorkPlace™ study by Jerome (2001) to link the construction of a social order to more permanent structures in the built environment.

### **3.6.0 The Paradigm Dilemma**

If researchers simply content themselves with studying everyday social life through the conversations and interactions between people, what credence is afforded to the underlying mechanisms, that is the settings and structures, which make those possible in the first instance? Social theorists such as Bourdieu (1977; 1990; 1999) and Giddens (1976; 1984; 1996) have argued that our everyday actions are meaningful to us, but they are also influenced by and reproduce structures which both enable and constrain our actions.

The aim of examining and explaining underlying mechanisms is to reflect the everyday world of meaning-making by including the conditions which make it possible. "Realism argues that the knowledge people have of their social world affects their behaviour and, unlike the propositions of positivism and empiricism, the social world does not simply 'exist' independently of this knowledge" (May, 1997: 12).

The approach adopted by the NetWorkPlace™ study accepts the notion that there is a world 'out there' and postulates the need for researchers to expand their modes of inquiry in order to more fully understand how people interpret that world. The adoption of a world-view which constitutes the basic assumptions about the existence of 'reality' and what sort of 'reality' is assumed to exist, is central to considerations of the paradigm dilemma.

Much of the past research in organisational settings has been undertaken from the functionalist paradigm which “generates regulative sociology in its most fully developed form” (Burrell & Morgan, 1979: 26). Central to this position is the idea that social facts exist outside of men’s [sic] consciousness which restrains them in their everyday activities. The aim being generally to understand the relationships between these ‘objective’ social facts and to articulate the sociology which explained the types of ‘solidarity’ which holds society together. For theorists such as Durkheim, the stability and ordered nature of the natural world was viewed as characterising the world of human affairs.

From an architectural perspective, functionalism dominated the Modernist period. For example, the theory embedded in Louis Sullivan’s dictum ‘form follows function’, indicated that the form of a building could be derived from a full knowledge of the purpose it was to serve. Architectural functionalism demanded the expression of each of the elements of a building, especially its structure. Similar beliefs are articulated through the work and writings such as those of Viollet-le-Duc (Hearn, 1990). Following on from this era, and

“despite the grave doubts of the father of structural anthropology, Claude Levi-Strauss, a number of architects in the early 1970’s believed it possible to transfer the basic methodology of structuralism to architectural thinking and analysis. Sceptical contemporaries highlighted the probability that architects were attracted by the name structuralism and the fact that it sought to give order. The belief by some architectural protagonists that they would eventually grasp the essential and underlying pattern of architecture is not known to have ever been realized”  
(Bullock & Trombley, 1999: 835).

“Today’s sociology is full of false oppositions, which my work often leads me to transcend ..... such as the opposition between theorists and empiricists, or that between subjectivists and objectivists” (Bourdieu, 1990a: 34). Such views reinforce the notion that reliance on a solitary research paradigm may inhibit a full understanding of and appreciation for the multi-faceted reality of today’s world. The contemporary era has provided us with a world-view demanding a much broader consideration of the ontological and epistemological underpinnings in our approaches to both research and practice.

### **3.6.1 A Contemporary Position**

The NetWorkPlace™ study adopted an alternative paradigmatic position as a way to move towards a balanced research outcome. This stance is well supported by a growing number of scholars who argue that the dominance of a single perspective

results in a narrow view that does not fully reflect the multi-faceted nature of social and organisational reality. Proponents of this viewpoint (Goles & Hirschheim, 2000; Schultz & Hatch, 1996; Gioia & Pitre, 1990) have argued that an exclusive view is always only a partial view. Methodological pluralism, multi-paradigm perspectives, and paradigm interplay, encompassing a diversity of methods, theories, and even philosophies, are suggested as ways to provide a more balanced understanding and such approaches are gaining greater acceptance across the research community.

As referred to previously, Giddens (1984; 1991) raised the objective-subjective dichotomy arguing that subjects (people) and objects (structure) do constitute separate realities, but that they are so intertwined and interdependent that they can be considered rather more like a duality within the same reality. For Giddens (1979), structure is both the medium and outcome of interactions. Garfinkel's (1967) ethnomethodology uses the concept of reflexivity to deal with the subjective-objective relationship of structuring and structure.

It will be shown throughout the following discussion that there is relatively widespread support for the view that the human activities of social construction which help create organisational structure, are in turn influenced by the objective characteristics of the very structure thus created. The approach to the NetWorkPlace™ study concurs with Collier's (1994: 3) claim that ".....the material world really does exist, independently of our thought about it."

Theorists such as Castells, located within the radical structuralist paradigm, whilst sharing an approach to science which has many similarities with that of functionalist theory, advocate a sociology of radical change from an objectivist position. "Society, ..... is a structured, conflictive reality in which social classes oppose each other over the basic rules of social organization according to their own social interests" (Castells, 2003: 23). Common to this view is that "contemporary society is characterized by fundamental conflicts which generate radical change, most often through political and economic crises" (Burrell & Morgan, 1979: 34). "For radical structuralism, a more macro focus on existing societal class or industry structures is of prime concern. Such structures however, are seen as objectively real and are taken as instruments of domination for higher members of the social hierarchy over lower ones" (Gioia & Pitre, 1990: 589). The theory building process within this paradigm is an exercise in persuasive argument and collation of historical evidence about structural features and the implications for transformational change. This is the standpoint from which Castells has formulated his concepts of the network

society. Whilst the influence of Marx upon the radical structuralist paradigm is undoubtedly dominant, it is also possible to identify a strong Weberian influence. The work of Castells who has contemporised this perspective through a consideration of how technology and information have shifted the social power dynamics, will no doubt also be an enduring contribution well beyond providing a bedrock foundation for the NetWorkPlace™ study.

As previously described, Burrell and Morgan's (1979) four paradigm classifications are based on fundamentally different assumptions about the nature of organisational phenomena (ontology), the nature of knowledge in relation to the phenomena (epistemology), and the ways of studying the phenomena (methodology). Gioia and Pitre (1990, 587) suggested that "using different theory building approaches to study disparate issues is a better way of fostering more comprehensive portraits of complex organizational phenomena." Theory building should not be viewed as providing an absolute truth, but as a search for comprehensive explanation formed from different world-views.

The concluding comments to this section are included as a summary of the preceding and to provide a basic theoretical position for the discussion following. Positivism embraces a particular ontological position, postulating that the universe is comprised of objectively given, immutable objects and structures. It encompasses an epistemology which seeks to explain and predict what happens in the social world by searching for regularities and causal relationships between its constituent elements. Based on Burrell and Morgan's (1979: 134) previously outlined notion of paradigms for the analysis of social and organisational theory, the interpretivist orientation is framed by the perspective that "social roles and institutions exist as an expression of the meanings which men [sic] attach to their world."

The interpretivist paradigm is based on the view that people socially (and often symbolically) construct and sustain their own organisational realities. The goal of the NetWorkPlace™ study is to generate descriptions, insights, and explanations of events so that the system of interpretation and meaning together with the structuring and organising processes are revealed.

### **3.7.0 Establishing the Philosophical Perspective**

The research undertaken in the NetWorkPlace™ study concerns a complex phenomenon with issues occurring on many levels, the organisational or institutional

aspects, the system orientation of the network, the collection of actors which comprise that system, and the individual actors themselves.

In order to begin the research task it was necessary to make some assumptions about the nature of the reality under investigation. The philosophical orientation chosen determines the basic ontological parameters and this in turn has significant implications for the way one conceives knowledge, the epistemological approach. Such decisions then guide and regulate how the study of the objects or events under investigation can be undertaken. Thus the importance of a philosophical basis for making both the ontological and epistemological choices necessary for the conducting of the research cannot be under-stated.

The dilemma in approaching the NetWorkPlace™ example was how best to study the complexity presented by both the network structures and the associated social events. Devin (2003) suggested that we are drowning in a sea of variables, theories, concepts, and methods from which to choose and that rather than one 'right' approach, many of these have much of value to offer. The objective of the abductive strategy already established is one of empirical investigation into events and activities within the workplace settings of the network context.

Bhaskar (1989) claimed that we should not simply be content to study and describe what we experience empirically, but that there is also a contingent responsibility to discover the structures and/or objects that have the power to produce or influence certain effects. He suggested that the work of theory is to help explain the processes and mechanisms that play a role in producing the effects or events we study. Events can be observed but the underlying mechanisms require abstraction and the application of theory to provide explanation.

In attempting to explain the 'realist' philosophy, Wikgren (2005: 11) claimed that "the very possibility of social theory is based on the existence of real social structures and systems that are emergent entities which operate independently of our conception of them, conditioning – but never determining – intentional agential activity, being nonetheless dependent on that human activity." There is no intention herein to provide any detailed discourse on the realist philosophy which began with the writings of Roy Bhaskar (1978; 1979) and has been complemented and further developed by others such as Margaret Archer. The objective is to establish a legitimate philosophical stance and theoretical underpinning for the

NetWorkPlace™ study which is compatible with the phenomenon and the context under investigation.

According to Bhaskar (1989) we can only understand the social world if we can identify and understand the underlying structures which generate and influence social events and discourse. All social phenomena are dependent upon the occurrence of human activity and Bhaskar (1989) claimed that all such action requires structures. Harvey (2002: 168) suggested that society is never the “unmediated transliteration of individual desire into structure, but human transformative power is always dependent on the facilities already in place.” Realists also accept that knowledge is constructed through human activity and communication and that concepts and beliefs are historically and culturally conditioned and therefore are always open to challenge and change on both a theoretical and empirical basis.

This philosophy thus extends and it is suggested enriches the analytical approach which maintains that social reality can only be represented through the discourse associated with social relations (Reed, 2001). The need for the inclusion of an interpretivist component to the NetWorkPlace™ study was previously argued for and established. However, a purist’s interpretive approach would focus on the sense-making and meaning achieved through dialogue and action in a human community but this excludes or at the very least limits the possibility for discovery of the possibility of structural influences or constraints. The realist philosophy embraces both the existence of structure and the production of meaning through human agency and activity.

A basic tenet of the realist approach is the existence of a stratified society which by extension demands a separation of structure and agency. In this way realism differs from the structuration theory of Giddens (1984) which deems that structure and agency are intertwined and inseparable. Willmott (2000) said that to deny a stratified world is to deny the very possibility of social theory. Wikgren (2005) suggested that the primary features of the realist conception are comprised of:

- ❑ a stratified social reality,
- ❑ an awareness of the importance of contextualisation, and
- ❑ the relation between structure and agency.

Utilisation of both an ‘objectified’ and ‘interpretive’ approach it is claimed enables a frame of reference to be established and the relevant elements of study to be

identified (Talja et al., 1999). Layder (1998) reinforced the concept of a reality comprised of both objective and subjective dimensions. His version expressed as 'adaptive theory', endorsed a position which "incorporates both the 'internal' subjective point of view of social interaction while simultaneously appreciating that such activity always takes place in the context of wider social settings and contextual resources" (Layder, 1998:140). It denotes a shift in perspective and is a position not dissimilar to that advocated by Habermas and other theorists of the Frankfurt School of thought.

The form of objectivism posited in this discussion should not be confused with the absolutist conviction that social activity or action is determined by social structure as is the case with the positivist, functionalist, and determinist viewpoints. Similarly, it would be naïve to presume that a social world constructed solely by the meanings, motivations, and reasons that people give for their behaviour, can possibly exhaust the entire fabric of reality.

It is shown through the NetWorkPlace™ study that, as Layder (1998) suggested, social activity is conditioned and significantly shaped by systemic phenomena such as ideology, values, power, money, physical environment, and the socially organised settings in which they are embedded, whilst simultaneously, social activity itself serves to reproduce, sustain, or transform these systemic features and social arrangements. Layder's (1998: 142) theory "assumes that the social world is complex and dense .....[and]..... furthermore, it also assumes that the texture of this complexity and density is formed from the multifarious interconnections between agency and structure."

It is an acknowledgement of both the objective and subjective realms and the connections between social agency and social structure that form the complex and multi-faceted social reality represented by the context of the NetWorkPlace™ study. It is suggested that such a philosophical position with its incumbent ontological, epistemological, and methodological implications can provide an enhanced rendering of the nature of social reality under scrutiny by including more within its frame of reference than previous or extant approaches.

It is proposed that an ontological basis consistent with the 'realist' school of thought suggested by Archer (1995; 1996; 2000) is the most appropriate philosophical framework within which to investigate the activities in workplace settings in the networked organisational context, and was duly adopted in the case of the



NetWorkPlace™ study. This approach also takes a lead from Danermark (2002) who advocated embracing methodological pluralism as the only way to access the various levels and mechanisms encountered in the social world. The NetWorkPlace™ study is thus committed to an investigative framework which incorporates the existence of pre-existing structure(s), a stratified social world, and the unpredictable but nonetheless explainable outcomes arising from the consequent interaction between the two as suggested by Archer (1996).

### **3.7.1 A Balanced View through Paradigm Interplay**

It is becoming increasingly more obvious that in part, the solutions to contemporary design problems reside in the knowledge and practice of a whole range of other disciplines and as Rochfort (2002: 165) concluded, “the interdisciplinary-integrative imperative can no longer be avoided.” As is fully outlined in Chapter 4, operationalisation of the NetWorkPlace™ study was undertaken in conjunction with and as an integral component of a trans-disciplinary host project entitled SCOP, involving researchers from a number of different disciplinary areas. In so doing, the NetWorkPlace™ approach does not concur with the paradigm incommensurability argument (Burrell & Morgan, 1979) but follows the lead of other contemporary researchers in facing the challenge of crossing paradigm borders (Gioia & Pitre, 1990; Schultz & Hatch, 1996; Goles & Hirschheim, 2000).

With this notion in mind, “multi-paradigm approaches offer the possibility of creating fresh insights because they start from different ontological and epistemological assumptions and, therefore, can tap different facets of organizational phenomena and can produce markedly different and uniquely informative theoretical views of events under study” (Gioia & Pitre, 1990: 591). This does not mean an indiscriminate merging of the distinct and historically entrenched paradigm categories outlined by Burrell and Morgan as might occur with an integrationist perspective where terms, implications, and assumptions are mixed without considering the relationships between them.

Rather, paradigm crossing resists either of these extreme positions by giving recognition to both the contrasts and connections between paradigms. Schultz and Hatch (1996) provide a compelling argument for the concept they define as ‘paradigm interplay’. The contrasts between paradigms are well known and defined, however the connections that also exist between them are utilised to describe a new

paradoxical positioning of the established paradigm views. Paradigm interplay is not concerned with resolving the contradictions of such paradox but on emphasising the inter-dependence of opposite perspectives, thus preserving the tension between opposing views.

In terms of the NetWorkPlace™ study, this enables the radical structuralist concepts of theorists such as Castells to inform and be informed by interpretivist modes of investigation such as those employed by Goffman, Garfinkel, and Sacks. It also allows extended explanation to be provided through the philosophy of contemporary theorists such as Bourdieu (1999) whose theory of practice forces one to consider both objective and subjective elements. Butler (1999: 114) highlighted the “generative [subjective] capacity of the *habitus* on practice” and the “objective determination of practice performed by *fields*” which are embedded in Bourdieu’s concepts. Further, paradigm interplay provides the possibility to extend the discourse in areas of both organisational studies and architecture which have traditionally adopted a functionalist framework although more recently, interpretivist modes have found favour in both disciplines.

The paradigm interplay strategy validates the trans-disciplinary iterative NetWorkPlace™ study approach of adopting an objective structural framework to establish the context, combined with an interpretivist investigation program. Such investigation follows an emergent development in which the constructs most applicable for describing the setting and the social order are suggested through the data collected from respondents. Analysis then explores the active sense-making and creation of meaning together with the ways in which meanings are associated, providing a rich character to the explanation of the networked organisational phenomenon.

Simultaneous acknowledgement of both contrasts and connections between paradigms also creates a type of intellectual tension which provides its own unique contribution to the research process in relation to the NetWorkPlace™ study. The duality of Castells’ (2000) ‘space of place’/‘space of flows’ concept has already been introduced in establishing the context of this research however as will be later seen, the analysis and discussion phases rely on the consideration and comparison of a number of dualistic relationships.

Paradox is often treated in the literature from a limiting ‘either-or’ perspective, paradigm interplay extends the notion by invoking ‘both-and’ thinking into the

process of dualistic reasoning to provide additional insight. This gives both credence and method to Cooper and Burrell's (1988: 101) suggestion that "in order to see the ordinary with a fresh vision, we have to make it extraordinary; that is, we must break the habits of routine thought and see the world as though for the first time."

Schultz and Hatch (1996) indicated that through an interplay strategy, both generality and contextuality can be emphasised and thus conceived in terms of each other. An example is provided by Schultz's (1991) study of "symbolic domains" where the behaviour of managers in both spontaneous and ritualised interactional situations is related to context and compared against norms generally associated with hierarchical relationships. She concluded that these domains consist of a distinct set of social definitions and meanings which characterise particular work settings. This approach was particularly informative in helping to understand the settings encountered in the NetWorkPlace™ study.

Maintaining a recognition of the interdependence which resides within tension enables a more comprehensive appreciation of the meanings associated with dualities to be reached. Paradigm interplay encourages and enables both categorical and associative thinking to be employed and to potentially uncover new levels or forms of understanding. "The interplay strategy offers an alternative to both paradigm wars and hegemony that celebrates diversity and provides orientation within a complex and often contradictory body of knowledge" (Schultz & Hatch, 1996: 551).

Organisations can be conceived of as many things simultaneously thus indicating that different views can exist together without one necessarily precluding the other. It follows that a multi-paradigm approach can generate more complete knowledge than can any single perspective in isolation. As Goles and Hirschheim (2000) noted, paradigm interplay simultaneously acknowledges both differences and similarities between paradigms. It permits the researcher to take advantage of cross-fertilisation between paradigms by transposing contributions from studies in one paradigm into the theoretical frameworks of another. Such transposition allows the findings of one paradigm to be re-contextualised and reinterpreted in such a way that they inform the research conducted within a different paradigm (Schultz & Hatch, 1996).

### **3.8.0 Collaboration Between Disciplines**

The approach adopted in the NetWorkPlace™ study of collaboration with researchers from different disciplines was based on the ability to gain access to particular professional or technical expertise. This provided the most comprehensive way to increase the richness of understanding of the network phenomenon from various viewpoints. A 'discipline' for the purpose of this case study research, was defined as being "a body of practice that is well supported by occupational groupings that identify with a defined territory of activity. Disciplines are supported by infrastructure designed to transfer and create knowledge within a defined field of endeavour. Such infrastructure includes professional associations, various publications and training institutions. A discipline may also be supported by competing and complementary theories" (Burgess et al., 2004).

Zeisel (1984: 53) claimed that "possibly the most rewarding procedures to use are the ones which team members jointly design to do throughout a project. Such procedures might be called 'transdisciplinary' because the criteria the team uses neither wholly reflect any one discipline, nor join different disciplines. They are new procedures developed by team members who respect each other's disciplinary norms, rewards, and sanctions, and who are willing and able to reevaluate their own norms in light of the team's common goals." Commenting on a personal design collaboration experience, St Pierre (2002: 135) said "in the end, we found ways to work together which transcended disciplinary boundaries and allowed the project to dictate what was most necessary."

#### **3.8.1 From Multi-Disciplinary to Trans-Disciplinary**

There has been a great deal of hype surrounding multi-, inter-, and trans-disciplinary research in recent times which appears to have captured the imagination of the management, information technology, and design disciplines amongst others. The belief is that by combining disciplines and incorporating multi-institutional collaboration, greater creativity and innovation amongst the research community can be achieved. This places an emphasis on many disciplines rather than single disciplinary learning and knowledge production (Newell & Swan, 2000; Gibbons, 1995).

Multi-disciplinary research connotes the involvement of a group of individual researchers from different specialty areas, combining their efforts towards a common outcome without any integration of the disciplines throughout the process. Each individual undertakes their own particular aspect of the research and provides separate results, without necessarily collaborating with each other in any way except to progress towards supposedly common goals. Newell and Swan (2000: 1322) described such an approach as the individuals being like “pieces of a jigsaw, where the pieces fit together but are not changed by being part of the jigsaw.

On the other hand, interdisciplinary research depends on joint knowledge production, rather than separate subject-based knowledge production. It leads to new knowledge, which combines the different disciplines – a kaleidoscope where the different pieces interact to create new patterns, which cannot be pre-determined by knowing what the individual pieces look like.” This gives some insight into the nature of the process undertaken in the NetWorkPlace™ study but gives no hint as to how the various disciplinary researchers are affected by the experience and how it might impact thereafter.

There appears to be a level of confusion and no clearly defined distinction between the usage of the terms inter-disciplinary and trans-disciplinary. The most common notion of inter-disciplinarity suggests that it is a type of academic collaboration in which specialists drawn from two or more disciplines work together in pursuit of common goals. Whilst inter-disciplinary ‘research centers’ are gaining prominence around the world, there is little information on how they originate and operate.

There is a paucity of empirical work dedicated to understanding how collaborations are organised, how researchers behave, and how activities are facilitated. There seems to be widespread acknowledgement that collaboration is a beneficial way of progressing knowledge, however the idea remains largely misunderstood, misrepresented, and thus potentially misconstrued.

Jürgen Mittelstrass (2006), Professor of Philosophy at Konstanz in Germany, described trans-disciplinarity as a principle of research involving the application of scientific approaches to problems that transcend the boundaries of conventional academic disciplines. Properly understood, it removes disciplinary impasses where these block the development of problems and the corresponding responses of research. He further claimed that inter-disciplinarity is in fact trans-disciplinarity.

The term trans-disciplinary research is deemed in the NetWorkPlace™ study to effectively function in the same way as the inter-disciplinary mode described by Newell and Swan (2000). It is further taken to infer however, that the research experience in some way influences the disciplinary participants or at least impacts on the way they are liable to operate in the future. It is posited that a post-experience transition in attitude of researchers in terms of how they apply their own disciplinary knowledge in the future, is more aptly identified by the term trans-disciplinary research.

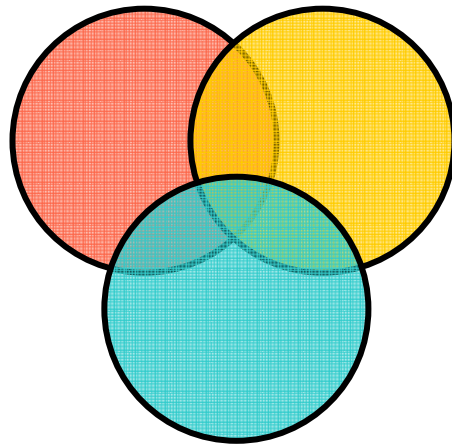
Accordingly, for the remainder of this thesis, the multi-disciplinary involvement of the various researchers in the case study of the overall SCOP project (refer Chapter 4) in which the NetWorkPlace™ study was embedded, is referred to as trans-disciplinary research.

The comparison provided above relating to pieces of a jigsaw and the kaleidoscope, provides a powerful image in depicting the differences between the nature of the two approaches in theoretical terms. The depiction of the trans-disciplinary model adopted for the NetWorkPlace™ study is illustrated utilising jig-saw pieces to represent the different disciplines involved. Importantly, the shape of the pieces are retained throughout the process of discovery to represent the notion that the individual disciplines maintain their own integrity. However, there is an understanding that the colours, tones, or hues may change along the way to represent the knowledge gained from the interaction with other disciplines. The development of the trans-disciplinary model of investigation (refer Fig. 4.6) and its application as a collaborative process (refer Fig. 4.7) are fully outlined in Chapter 4.

In order to clearly differentiate between the notions of multi-disciplinary and trans-disciplinary in this context, the model developed by the (USA) *National Research Council of the National Academies* (Mitchell et al., 2001: 99-102) is adopted herein for use in illustrating the NetWorkPlace™ study approach (refer Fig. 3.2).

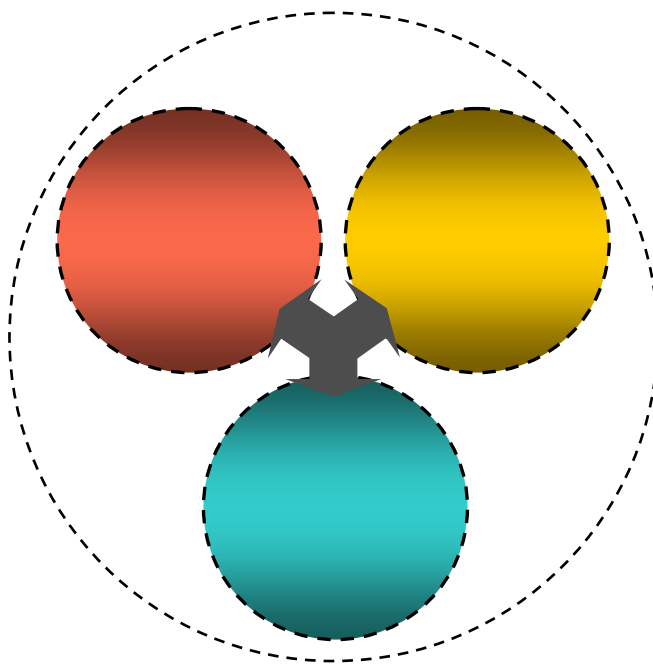
This version was previously adapted from models developed in the UK by Somerville and Rapport (2000) to explain the relationships between information technology, the arts, and design. The multi-disciplinary model (Mitchell et al., 2001: 99) is depicted as three intersecting circles. Where the circles overlap (refer Fig. 3.2) indicates the part of each individual discipline which contributes to the total outcome. Some aspect of theory or practice that is “compatible, useful, or mutually

beneficial to other disciplines” is provided. The non-overlapping areas infer that there is no fundamental change to the way each individual discipline works.



**Multi-Disciplinary Model:**

- Mixes knowledge from the various disciplines for a common purpose.
- Each discipline retains its original qualities.
- Area of intersection creates new context for application of already existing concepts and methods.



**Trans-Disciplinary Model:**

- Transaction space requires understanding of own and other disciplines.
- New common space created specifically from interpenetration of disciplines.
- Disciplinary boundaries are shown as permeable to accommodate absorption of knowledge from other disciplines.
- Transaction space may be transient leaving separate disciplines reconstituted after a single transaction, or sustained over time leading to a durable merging.

**Fig. 3.2 Comparative Multi-Disciplinary / Trans-Disciplinary Research Models**  
(Distinction proposed by Mitchell, 2001: 99)

Through the paradigm interplay, trans-disciplinary framework outlined, the methodological underpinning of the NetWorkPlace™ study has been established.

In contrast, the circles representing the individual disciplines (refer Fig. 3.2) in the trans-disciplinary model (Mitchell et al., 2001: 99) do not overlap, but instead share a common framework indicated by the surrounding circle. “Each discipline maintains its own knowledge and methodologies but is fully, not partially open to the other disciplines ..... the disciplines not only apply their methods in a new context but are also receptive to fundamental changes in knowledge and methodology based on their interaction.”

What is critical in this model and to the ability to interact in a trans-disciplinary fashion is the permeable nature of each discipline involved, together with the frame surrounding the disciplines indicating a mutual awareness and understanding. The shared frame may only be a transient phenomenon, with various disciplines engaging for specific research projects and then moving apart to continue their separate development.

Following is a discussion of the methods employed in order to illustrate the approach adopted to investigate the NetWorkPlace™ phenomenon. The data analysis phase (refer Chapters 5 and 6) then reveals an interpretation of the construction of social order within the networked organisational context. This in turn forms the basis of the discussion which informs the workplace design process through an understanding of the tension thus created between and symbolised by the ‘space of place’ and the ‘space of flows’.

### **3.9.0 Data Collection and Analysis Methods**

The purpose of this section is to provide a general descriptive overview of the qualitative methods applied to the NetWorkPlace™ study investigation. Precise details of the participants involved and the data collected are contained in the following chapter (refer Chapter 4). The multi-method form of data collection employed in the case study embraced multiple sources including an open-ended style of interviewing, both structured and casual observations in the field, and the examination of organisational documents and archival records, referred to by Wolcott (1994) as ‘asking, watching, or examining’.

As a way of controlling to a degree the amount of data collected, the research questions were continually referred back to in relation to the emerging insights, and the conceptual framework guiding the study remained in a state of refinement throughout the entire process. This made both data collection and the analysis



stages, 'dynamic selective processes', enabling the focus of the investigation to be continuously monitored.

The data collected throughout the two year investigative phase focused on the participants 'lived experiences'. The fundamental objective was to gain an understanding of the 'meanings' and relative importance attributed to their interpretations of the 'space of place' and the 'space of flows'. These were extended further to connect the meanings to the processes and structures of the social world by which they were surrounded (Garfinkel, 1986), that is the context, resources, and constraints of the network enterprise in this case.

One major feature of qualitative data is that it focuses on "naturally occurring, ordinary events in natural settings, so that we have a strong handle on what 'real life' is like" (Miles & Huberman, 1994: 10). This case study was able to reveal the complexity of the network by formulating 'thick description' nested in an actual context. The focus on a specific case as is the situation in the NetWorkPlace™ study, gives emphasis to a bounded phenomenon, embedded in its context.

"The need to take account of contexts is a recurrent theme in qualitative analysis. Contexts are important as a means of situating action, and of grasping its wider social and historical import. This can require detailed descriptions of the social setting within which action occurs; the relevant social contexts may be a group, organization, institution, culture or society; the time frame within which action takes place; the spatial context; the network of social relationships, and so on."

(Dey, 1993: 33)

The outcomes of research in this paradigm are grounded in the experiences and embedded in the world view(s) of those most likely to be affected, the participants in the study. Interviewing, the primary data collection method of the NetWorkPlace™ study thus 'gives voice' to those participants in an attempt to get as close as possible to their understanding of the context in which they reside, the 'place where they are at'. Place here is used in the metaphorical sense to include not only a physical situation, but also where and how they fit into the world of the network enterprise.

No singular, previously utilised instrument for interviewing, nor a universally applicable formula of analysis was available for use in the case study undertaken, and thus general principles and methods used in qualitative research and applicable in this context have been adopted to guide the approach taken and to underpin the

outcomes (Yin, 1993; 1994; 2003; Miles & Huberman, 1994; Huberman & Miles, 2002; Denzin & Lincoln, 1994; Guba & Lincoln, 1981).

Case specific interviewing instruments (refer Chapter 4 and Appendix 4.1) were formulated and applied throughout the data collection phase, continuously being referred back to during the analysis of the data. The procedures utilised to complete the analysis stages were drawn from those widely documented by the above authors but assembled in a manner specific to this case (refer Chapters 5 and 6). This was done to ensure compliance with generally accepted qualitative practices in the task of 'meaning making', and to underpin the assurance that the various issues relating to validity and reliability were appropriately addressed in this study. Ultimately, the objective of the NetWorkPlace™ study aligns with Stake's description of the intent of qualitative research being "not necessarily to map and conquer the world but to sophisticate the beholding of it" (quoted in Krathwohl, 1998: 229).

### **3.9.1 Multiple Sources of Evidence**

One of the critical questions posed in regard to qualitative research is whether the data and results are both valid and repeatable (Miles & Huberman, 1994). A key feature of the case study approach is "the incorporation of multiple sources of evidence" (Groat & Wang, 2002: 352). This is achieved because a strength of the case study framework is that it permits the use of a number of different methods of data collection and analysis, depending on the study context and objectives.

"The depth, complexity, and multi-faceted quality of the case study contribute to its robustness as a research design" (Groat & Wang, 2002: 360). As a means of ensuring validity and reliability, both Glesne (1999) and Stake (1994; 1998) recommended the use of multiple data-collection methods in order to contribute to the trustworthiness of the data. "This practice of relying on multiple methods is commonly called *triangulation* [and] in order to increase confidence in research findings may also involve the incorporation of multiple kinds of data sources" (Glesne, 1999: 31).

The nature and extent of the actual NetWorkPlace™ study field 'investigations' as previously mentioned, are outlined fully in Chapter 4 and the 'analysis' stages are detailed in Chapters 5 and 6. The purpose of the following discussion is to provide adequate background information to support the types of data collection and

analysis methods employed as being the most appropriate for this case and they include:

- ❑ Semi-structured, open-ended interviews
- ❑ Non-participant observation
- ❑ Documentary evidence
- ❑ Content analysis
- ❑ Conversation analysis.

These are consistent with the range of methods which have been established throughout a long tradition of social science research undertaken within the methodological framework previously established and discussed herein.

### **3.9.2 Interviews**

The process of interviewing has been described by Baker (1997) not as data 'collection', but as data 'making' or data 'generation'. She described talk as social action, constructed in-situ by the participants, enabling people to "achieve identities, realities, social order and social relationships through talk" (Baker, 1997: 31). Holstein and Gubrium (1997: 113) described interviewing as "a way of generating empirical data about the social world by asking people to talk about their lives." Interviews can be viewed as special forms of conversation about peoples' experiences.

Active interviewing refers not merely to replies elicited from respondents by the researchers questioning, but involves meaning which is 'actively assembled or created' between participants through an interactive process. In Schutz's terms, "the interviewer attempts to activate the respondent's stock of knowledge ..... to convey situated experiential realities in terms that are locally comprehensible" (Holstein & Gubrium, 1997, 123 & 117).

The interview process undertaken in the NetWorkPlace™ study utilised questions designed to encourage open-ended discussion in order to elicit a more holistic view of the participants' experiences. This technique allowed respondents to begin to reveal their attitudes related to the topic area without placing artificial limits on their replies. More specific issues of interest to the study were investigated further using a series of prompts. The benefit of this approach in practical terms facilitated a testing of agreement with earlier interviewees or the provision of an explanation of an area of disagreement for an overall deeper understanding on the part of the

interviewer. Such an approach is consistent with what Bob Dick (1990) described as convergent interviewing. In broad terms and based on de Vaus's (1995) work, questions were formulated and interviews structured with a view to understanding relevant aspects of the participants:

- ❑ behaviors (what people do)
- ❑ beliefs (what people think is true)
- ❑ attitudes (what people think is desirable), and
- ❑ attributes (respondent's characteristics).

Discussion sessions were supplemented during the interviews by making notations based on observations of how the interviewees oriented themselves to the process through bodily positioning, perceived sense of comfort, and level of interaction.

As Goffman (1961: 90-91) related, "face-to-face situations ..... are ones in which a great variety of sign vehicles become available, whether desired or not, and are, therefore, situations in which much information about oneself can easily become available", ..... and further, "..... whatever an individual does and however he appears, he knowingly and unknowingly makes information available concerning the attributes that might be imputed to him and hence the categories in which he might be placed. The status symbolism in his 'personal front' provides information about his group and aggregate affiliations."

### **3.9.3 Observations**

Goffman (1970: 4) explained that "individuals, like other objects in this world, affect the surrounding environment in a manner congruent with their own actions and properties. Their mere presence produces signs and marks." He further surmised that these actions pertain to the general relationship of that individual to what is transpiring. Thus, from this perspective, meaning is very much bound to context. When members engage with or find themselves in the immediate presence of others, they tend to do so as participants of what Goffman (1963: 18) referred to as "a social occasion. This is a wider social affair, undertaking, or event, bounded in regard to place and time and typically facilitated by fixed equipment; a social occasion provides the structuring social context." This has quite specific implications in that "the behavior of an individual while in a situation is guided by social values or norms concerning involvement" (Goffman, 1963: 193). In a work setting, these may be influenced by both personal and organisational values and

norms which, as was the case in the NetWorkPlace™ study, could potentially be in conflict.

The NetWorkPlace™ study observed participants engaging in their everyday workplace activities. These observations included particular institutional activity, ceremonial rituals and etiquette associated with the workplace, and mundane daily tasks involving members interacting with each other and transacting with their environment. All societies and on a smaller scale, communities, tend to formulate their own rules and codes of conduct which determine appropriate behaviors. “In our society the code which governs substantive rules and substantive expressions comprises our law, morality, and ethics, while the code which governs ceremonial rules and ceremonial expressions is incorporated in what we call etiquette” (Goffman, 1967: 55). Together these could be broadly termed as the ‘obligations of involvement’ within the interaction ritual.

Strong (1988: 231) emphasised that a central argument in much of Goffman’s work is that the ceremonial order, or the etiquette of any social occasion has “a profound importance for the viability of the micro-social order.” In the analysis of observations it is worth noting Schegloff’s (1988: 117) warning that “not everything *in* the setting is *of* the setting.” By this he is inferring that not all actions and talk at work are about work, that is, the setting of the activity is not necessarily “procedurally consequential.” However, “it is through the ways in which the talk (and other conduct) is produced that the work setting is realized (by and for its participants).” Goffman (1981: 1) asserted that “everyone knows that when individuals in the presence of others respond to events, their glances, looks, and postural shifts carry all kinds of implication and meaning.” It is these actions which take on a specialised and implicit role in communication behavior and these should be looked to and provided for in relation to the displaying of members’ alignment to interactional events.

Within the investigate phase of the NetWorkPlace™ study, observations of workplace sites were undertaken in order to gain a familiarity with, and a sense of the organisational and social dynamics. The observations of ‘social occasions’ helped to clarify and further inform the interpretation of issues revealed through interview sessions. In the case of the NetWorkPlace™ study, the observation of behaviors in space assisted in gaining an understanding of the role and impact of the physical workplace environment in the establishment of a social order created by

the identified groups, and how these inhibited or enhanced social interaction across the network.

### **3.9.4 Documentary Evidence**

Documentary evidence provides a rich source of ‘institutional’ information which can provide a deep insight into the workings of an organisation. Atkinson and Coffey (1997: 45) note that “fieldwork is often conducted in settings that are themselves documented by the indigenous social actors ..... it is important to realize the extent to which many cultures and settings are self-documenting.” Therefore, in order to help understand how organisations work and how people in them act, react, and interact, qualitative field research must pay careful attention to the collection and analysis of an organisation’s documentary reality.

Corporations and organisations produce many document types. Amongst these there is a variety concerned with the organisation’s ‘presentation of self’ or what may be more appropriately termed ‘image management’. There are also those which document the rules and policies intended to direct, prescribe, or contain behaviors and actions within the organisation.

In addition to the prescriptive institutional documents are the documentary records that embody an organisations’ actions, encounters, activities, and processes. “The analysis of documentary reality must ..... look beyond separate texts, and ask how they are related. It is important to recognize that, like any system of signs and messages, documents make sense because they have relationships with other documents” (Atkinson & Coffey, 1997: 56). Documentary exhibits examined in the NetWorkPlace™ study included:

- ❑ Corporate Governance Documents
- ❑ Corporate and Business Plans
- ❑ Organisation Structure Charts
- ❑ Office Accommodation Policies
- ❑ Architectural Floor Plans

Analysis of the various organisations’ mission statements, goals, and objectives help to reveal insights into the ‘public face’ of the organisations under investigation and provide some understanding of their respective strategic intents. Business plans provide clues as to the commercial and organisational priorities. Organisation structure charts reveal the levels and degrees of hierarchical stratification. These

charts give some indication as to whether the organisations tend towards bureaucratic (command/control) or flat structure (employee autonomy) management styles, and help to explain or understand relationship issues revealed through the interviewing and observation data collection processes. Information from accommodation policies and existing floor plans indicate space allocations and distributions to help reveal some of the explicit and implicit attitudes towards the organisational social systems.

### **3.9.5 Interview Content Analysis (The 'Network' Dimension)**

"An initial attempt to develop categories which illuminate the data" (Silverman, 2001: 71) best describes the approach employed in commencing the process of data analysis involving all of the organisations investigated in the NetWorkPlace™ study. This follows the technique commonly used in a grounded theory approach (Glaser & Strauss, 1967), where the mass of data collected is examined in order to establish a 'feeling' for the issue(s) involved. Grounded theory then attempts to saturate the categories with many appropriate examples in order to demonstrate their relevance and then further develop them into more general analytic frameworks to be able to generalise outside of the setting.

However, the content analysis as applied in this case continues to refine the initial categories to become more specific to the single case context, ensuring through the process that the insights are firmly 'grounded' in the empirical data presented. This expanded the understanding and explanation of the issues revealed through the everyday activities of the members of the network investigated.

Miles and Huberman (1994) defined analysis as consisting of concurrent flows of activity, described generally as data reduction; data display; conclusion drawing and verification. In this case the analytical process involved distinct and yet highly interconnected stages ranging from the purely mechanical to the creative and conceptual in order to determine meaning, salience, and the inherent connections within the data. An analytical approach developed by the American Institute for Social and Community Planning Research (SCPR), termed simply as '*Framework*' (Ritchie & Spencer, 2002), involving sifting, charting, and sorting material according to key issues and themes was adopted for the NetWorkPlace™ content analysis process.

Because of the nature of the applied qualitative research undertaken by SCPR, *'Framework'* has been utilised in numerous studies. It has been reportedly used on in-depth and group interviewing, longitudinal studies, case studies, and projects involving different groups or sub-populations of participants. It has also been used successfully by two or more researchers working conjointly on a single project, and in some cases across different institutions. "The method, of course, needs to be adapted to suit the aims and coverage of a specific piece of research, but it has proved flexible for a range of different types of studies" (Ritchie & Spencer, 2002: 328).

The key stages to qualitative data analysis involved in *'Framework'* were thus adapted to the circumstances and the data set unique to the NetWorkPlace™ analysis and for the purpose of this case study are re-defined as the analytical phases of:

- Familiarisation
- Clustering
- Charting
- Mapping and Interpretation

The guidelines and frameworks provided by Miles and Huberman (1994) and Ritchie and Spencer (2002) were particularly influential in formulating the basis of the approach to the analysis of data collected for the NetWorkPlace™ study. The applied research of this study was undertaken in conjunction with a host project involving various other disciplines (refer Chapter 4). Each of these took responsibility for their own research outcomes and for the integration of findings into a holistic view of the overall through trans-disciplinary collaboration, requiring that the approach adopted was made visible to all throughout the procedure. The process and methods of analysis followed in the NetWorkPlace™ study (and where appropriate integration into the host project) are outlined throughout the data analysis sections of this thesis (refer Chapters 5 and 6). The approach is presented as systematic and disciplined but is not intended to represent a prescriptive formula for guaranteed outcomes, merely a legitimate way to explore the data in this context.

### **3.9.6 Conversation Analysis (The 'Local' Dimension)**

Analysis at the 'local' dimension consisted of an ethnomethodologically informed approach. This aspect of the NetWorkPlace™ study focused on an individual



workplace setting, within one only of the participating supply chain organisations. The conversation analysis technique was applied to interview transcripts, observed conversations, and recorded focus group discussions.

“Erving Goffman ..... established that social interaction embodies a distinct moral and institutional order” (Heritage, 1997: 161). Goffman’s concept of the institutional order of interaction was extended by others in the field of conversation analysis who “established that these practices ..... make social action and interaction, mutual sense-making and social reality construction possible.” Goffman’s essays illustrate three main points regarding talk or conversation (Lemert & Branaman, 1997). Firstly, talk is governed by social rules and common understandings; secondly, talk is always a form of social interaction; and thirdly, talk is a loosely anchored performance aimed at establishing the alignment of a participant in social interaction.

Radley (1996: 35) insisted that “language is the medium through which we make sense of the world for each other, establishing how things are”. The most influential body of studies carried out using the ethnomethodological approach, are said by Cuff (et al: 1992) to be those involving conversation analysis (CA). These consist of a large body of empirical studies concerning the ‘sequential’ and ‘interactional’ organisation of ordinary conversation. “Conversation analysts seek to identify the structures in, and through which, the constitutive features of ‘ordinary conversation’ are accomplished in the normal course of talk” (Cuff et al., 1992: 181). The main concerns in this method of analysis are the ways in which the patterned, orderly properties of conversational talk are achieved by speakers in the course of the talk itself. Conversation consists of a number of typical features which take on particular importance in analysing CA. These characteristics can be described briefly as follows (Heritage, 1984):

- ❑ it is sequential in character (i.e. utterances are ‘tied’ together).
- ❑ as an interactional activity, it involves ‘turn-taking’.
- ❑ overlaps, gaps, and various types of ‘repair’ work occur frequently.
- ❑ sequential structuring introduces ‘conditional relevance’.
- ❑ communicative action is both context shaped and context renewing.

It has been widely reported and previously mentioned herein that ethnomethodology emerged through the pioneering studies of Harold Garfinkel. This led to the development of conversation analysis through the innovative research of Harvey Sacks (1992), considered to be the most prominent figure in the establishment of

CA as a research method, and his colleagues Schegloff and Jefferson. It has been reported that research through ethnomethodology and conversation analysis has been informed by two general issues. “Firstly, it has been directed towards investigating the methodological resources used by participants themselves in the production of in-situ social actions and activities (through talk, bodily comportment, artefacts and the like). Secondly, it has exploited the sequential organisation of interaction in order to examine how participants themselves are orientating to each others' conduct and to help to identify the resources on which they rely in the accomplishment of social actions and activities” (Bolzoni & Heath, 1997). Ethnomethodology and conversation analysis are concerned with the practices and reasoning, the competencies or 'methods', on which individuals rely in the production and recognition of social actions and activities. They treat social actions and activities as in-situ, on-going accomplishments achieved through the concerted and reflexive achievement of the participants (Heritage, 1984).

It is perhaps the work of Sacks (1992) on the sequential organisation of talk which has provided the most significant contribution to ethnomethodological studies. Conversation analysis is not concerned with language per se. It derives its importance from the belief that talk is a principal means through which actions and activities are produced and recognised by individuals. Sacks' (1992) commentaries have had a profound influence on the analysis of talk generally and particularly in sociological studies involving workplace activities.

Conversation Analysis utilises a technique known as the Membership Categorisation Device (MCD) as a resource for sense-making of utterances. “Tracing members' use of categories ..... in any settings, including interview settings, is a means of showing how identities, social relationships and even institutions are produced” (Baker, 1997: 132). MCD analysis seeks to indicate how the interview participants make use of the resources of membership categorisation in order to link the categories and attributes and to explain “the courses of social action that are implied” (Baker, 1997: 142). The analysis then helps build an image of how the participants structure ‘social order’.

Many of the respondents whose conversations were analysed as part of the NetWorkPlace™ study (refer Chapters 5 and 6) could be described as ‘key respondents’ due to their critical roles in the network processes. Fetterman (1989: 59) claimed that ‘key respondents’ are often able to provide a deeper insight due to their roles as “cultural brokers, straddling two cultures” within the organisational

hierarchy. It has been shown in this study that a privileged hierarchical position does not necessarily guarantee access to other cultures within the organisation or network. What became evident in the analysis phase of this research was the shift in power dynamics relative to either hierarchical position or the knowledge one has about the network, both situations enabling different degrees of manoeuvrability and changing positions of influence.

It is not enough however, merely to describe the situated production of talk, but to show how what is being said relates to the experiences and lives being studied. This can be achieved from “an ethnomethodologically informed social constructionist approach that considers the process of meaning production to be as important for social research as the meaning that is produced” (Holstein & Gubrium, 1997: 114). Conversation is thus considered to be not just a topic of interest, but an analytical resource and it was this approach that underpinned the analysis of the NetWorkPlace™ study conversation data sets.

### **3.10.0 Extending the Boundaries**

It is appropriate in concluding the methodological grounding of this thesis to provide a brief discussion in relation to the issues of causality and generalisability in the case study context. The methodology and methods adopted for the NetWorkPlace™ study have built upon and further extended some of the traditional research parameters of the qualitative tradition and in so doing is justified in positing a capacity to add to the impact and contributory powers of the case study approach.

#### **3.10.1 The Issue of Causal Links**

Causality is one of the frequently discussed issues in research design and in many instances the goal of the research. Experimental research is arranged so as to ascertain the causal capacity of the independent or treatment variables. Correlational research design is used to identify patterns and relationships but generally stops short of attributing cause. Groat and Wang (2002: 349) suggested that “qualitative strategies can also address the issue of causality, albeit in a quite different way than experimental research ..... these strategies offer the potential to uncover the multiple, complex, and sometimes overlapping factors that eventually lead to particular outcomes”.

It is argued that posing questions to respondents to elicit their opinions or interpretations regarding the causality of events or issues will provide legitimate insights which can be considered to be as equally convincing as those obtained using an experimental research strategy (Kwansah-Aidoo, 1999). Who, after all, is better positioned to explain causality within a particular context than those in the act of constructing the social reality through their 'lived' experience? Perceived causes 'are' reality for those who believe them to be so. It is in this spirit of suggestions extracted from members' accounts that the NetWorkPlace™ study identifies the existence of links between the issues revealed in the investigation. By extension, the consequent implications for the 'space of place' and the 'space of flows' are able to be adequately explained, beyond a mere description.

### **3.10.2 Generalisability**

Groat and Wang (2002) drew attention to the conventional criticism of case study research by mentioning the generally held belief that there is no basis for generalising from one case to other cases. They suggested further however through reference to the assertions of Robert Yin, that this argument can be vigorously contested. "He [Yin] maintains, the case study's strength is its capacity to generalize to theory, in much the same way a single 'experiment' can be generalized to theory, which can in turn be tested through other experiments" (Groat & Wang, 2002: 354). Duffy (2000) strengthened this argument by suggesting that the architectural profession in general should be more research based and more pro-active in initiating programs to collect data from cumulative case studies. To substantiate this point about generalisability, Yin (1994) himself cited the work of Jane Jacobs and his observation is worth quoting in detail:

"This approach is well illustrated by Jane Jacobs in her famous book [that] is based mostly on her experiences from New York City. However, the chapter topics, rather than reflecting the single experience of New York, cover broader theoretical issues in urban planning, such as the role of sidewalks, the role of neighborhood parks, the need for primary mixed uses, the need for small blocks, and the processes of slumming and unslumming. In the aggregate, these issues in fact represent the building of a theory of urban planning. Her theory, in essence, became the vehicle for examining other cases, and the theory still stands as a significant contribution to the field of urban planning."

(Yin, 1994: 37).

Yin (1994: 45) advocated that "the power of generalizability comes from the concept of replication, rather than the concept of sampling". Some advocates of the case study warn researchers that too great a focus on generalising to theory can obscure

the value and uniqueness that each case can offer on its own terms. Robert Stake (1998: 86-109) distinguished between what he called the instrumental case study and the intrinsic case study. For researchers using the former, the case is of secondary interest to the theory that can be established from it. In the intrinsic case study, the research is “undertaken because one wants better understanding of this particular case” (Stake, 1998: 88).

As Groat and Wang (2002) pointed out, the potential for generalising to theory represents an important strength of the case study, however the theory remains tentative until confirmed or refuted by other case studies. Blaikie (2000) suggested that generalisability across like cases or multiple-site situations is possible, and that it may also be possible to generalise from a present case to a future case with similar constraints and criteria.

It is acknowledged that generalisation from a single case to ‘all’ other situations however, is not possible. This is not to suggest that the findings in one particular case or context won’t be present in another case, particularly in a situation with similar characteristics. As suggested earlier by Duffy (2000), cumulative case studies undertaken in the design field can aid ultimately in a higher order of understanding and the subsequent formulation of theories. The NetWorkPlace™ study generates a number of ‘propositions’ throughout the discussion component of the thesis which will potentially contribute to future theory development.

Gifford (1998) contended that environmental psychology is a discipline that seeks to understand the dynamics among multi-faceted dimensions such as persons (personality, sex, age, role, etc); psychological processes (learning, cognition, privacy, etc); and environmental problems (nuclear power, pollution, poor architectural design, etc). He discussed the fact that a large proportion of research emphasises various combinations of these but that a fourth dimension, ‘places’, has been relatively neglected as a focus of research.

It was suggested that this may stem from the desire to find “universal (or generalizable) truths” (Gifford, 1998), but importantly that we may learn something about the universal from the particular. “Sommer and Wicker in 1991 called this gas station psychology and Barker in 1968 called it the study of behavior settings. From some studies of one place we learn only about pragmatic aspects of that place, and no-one need care except those with a personal stake in that place” (Gifford, 1998: 4). He claimed further however that an accumulation of studies of particular ‘places’

may yield insights for a more universal and a broader understanding. This line of reasoning was extended in the context of the NetWorkPlace™ study to include ‘workplaces’ in particular as a means of informing both theory and practice in the design discipline.

### **3.11.0 A Case of ‘Being-at-Work’**

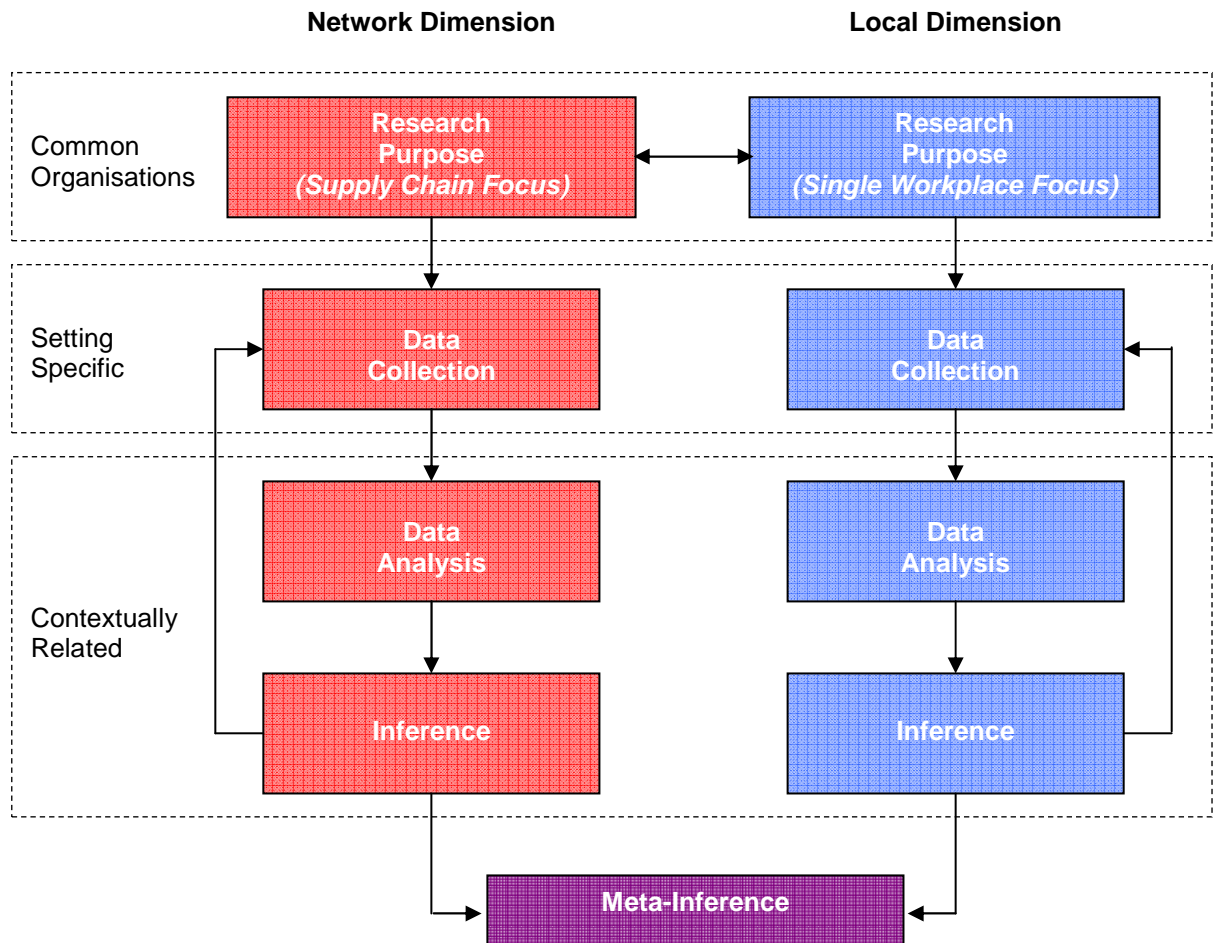
The NetWorkPlace™ study was undertaken as a case within dual contextual dimensions. It sought to investigate socio-spatial phenomena involving related sites and complex interactional factors. Issues pertaining to organisational, sociological, technological, and spatial (built environmental) perspectives were dealt with in order to uncover the complex dynamics of the setting, comprising inter- and intra-organisational related workplace sites.

The context of this research provided the opportunity to study a case of multiple interactions both within and across organisational boundaries. From both a theoretical and practical point of view, the level of complexity involved, and the virtues previously discussed of a case study design suggested that this approach was the most appropriate in order to investigate the case of ‘being-at-work’ in an inter-organisational setting.

An approach which adopted as its focus an interpretivist orientation within a realist paradigm was utilised in the investigative and analytical phases of the research. Within the parameters of this study, members of society were seen as active agents who constructed their social order on the basis of the meanings and interpretations they assigned to their actions, interactions, and their environment. Of fundamental importance to this study was to explain the ways that the members of the network came to understand, account for, take action, and otherwise manage being-at-work in this specific context.

How this case study was formulated and operationalised is described in detail throughout Chapter 4 following. The investigative phase was undertaken as two distinct components of the study and the analysis of each is outlined in Chapters 5 and 6 respectively. These are defined as being relative to either the ‘network dimension’ or the ‘local dimension’. The ‘network dimension’ comprises all of the participating organisations which constitute the network enterprise whereas the ‘local dimension’ is restricted to one specific workplace site.

It is considered that the NetWorkPlace™ adaptation of the ‘mixed methodology’ approach discussed and depicted following (refer Fig. 3.3) was a logical outcome of the argument presented in this chapter.



**Fig. 3.3 Multi-Method Qualitative Design (Concurrent Mixed Model Design)**  
(adapted from Tashakkori & Teddlie, 2003: 686 & 688)

In terms of its fundamental methodological approach, the NetWorkPlace™ study took a lead from Tashakkori and Teddlie (2003) [and others previously discussed] who suggested that a ‘third methodological movement’ has evolved in social and behavioural research as a result of the ‘paradigm wars’ and past controversies between quantitative and qualitative approaches.

They termed this the field of ‘mixed methodology’ and described it as constituting a more pragmatic way of utilising the strengths of alternative approaches within a single methodological framework. They claimed that such an approach has the

potential ability for mixed method research to provide answers to questions that other methods cannot, with better or stronger inferences, and the opportunity for presenting a greater diversity of views.

Having given due regard to the ontological and epistemological underpinnings of the long held qualitative tradition, this approach was an appropriate way to proceed with the investigation considering the complexity of both the context and the research task. How the methodological approach established for the NetWorkPlace™ study was operationalised and applied in the analytical and interpretive phases is sequentially and comprehensively outlined in the chapters following.



Chapter 1 INTRODUCTION

Chapter 2 LITERATURE REVIEW

Chapter 3 METHODOLOGY

**Chapter 4 THE NetWorkPlace™ STUDY:  
A 'Case of' Being-at-Work in a  
Networked Organisational Context.**

Chapter 5 ANALYSIS - Network Dimension

Chapter 6 ANALYSIS – Local Dimension

Chapter 7 DISCUSSION

Chapter 8 CONCLUSION

## **Chapter 4      THE NetWorkPlace™ STUDY: A ‘Case of’ Being-at-Work in a Networked Organisational Context.**

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### **4.1.0            Introduction – The Distinction**

The case study, which constitutes the fieldwork component of this thesis, was investigated and is reported upon under the title of the NetWorkPlace™ study. The term is formulated from a merging of the terms ‘network’ and ‘workplace’, thereby succinctly describing the nature of the context whilst capturing the essence of the collaborative nature of the study. It also serves a more pragmatic purpose: to provide a means of delineating the intellectual property associated with the workplace environment component of the broader trans-disciplinary collaboration undertaken.

A distinction is made between the individual case study undertaken to inform this thesis (the NetWorkPlace™ study) and the research vehicle which enabled the fieldwork to be completed (the SCOP project). The NetWorkPlace™ study was operationalised in collaboration with and as an integral contributor to an industry based project examining innovation in a supply chain context. The host project is referred to as SCOP, an acronym for ‘supply chain optimisation project’ and will be referred to by this term to clearly differentiate it from the NetWorkPlace™ study throughout this thesis.

SCOP is concerned primarily with identifying and implementing improvements to the supply chain management function by investigating inter-organisational collaboration. Through the exploration of a single supply chain function involving the cooperation of three large Australian corporations, ways to stimulate innovation across the participating organisations have been sought.

The NetWorkPlace™ study is an independent investigation which also contributes knowledge relating to workplace design to SCOP through a collaborative process. It has been established through the literature (refer Chapter 2) that the physical environment is an area considered to be an invaluable organisational support mechanism which both reinforces and maintains the structural and social dimensions of an organisation. The implications in the network context have not however been explored prior to this research. The ability to gain new understanding

within the extended context described herein as the network entity, illustrates the point made by Stake (1994: 237), that because of “its particularity and ordinariness, this case itself is of interest.”

The specific theoretical issues which underpin the study, will be discussed firstly in order to contextualise this case within the general framework previously discussed (refer Chapter 3). This will be followed by a comprehensive outline of the case study implementation to consolidate the methodology and methods which enable an understanding of the phenomenon in the new context to be derived.

## **4.2.0 The Broad Framework**

Consistent with the methodological approach outlined previously in Chapter 3, within the inter- and intra-organisational domains of the NetWorkPlace™ study, both objective and subjective criteria are necessary considerations in order to understand the ‘experience’ of being-at-work in this network context. The objective aspects are represented by the structural components of organisational life embodied in the rules, regulations, and policies of governance, operational systems and processes, together with the infrastructure provided by technology and the physical environment. The subjective aspects are accessed through the social dimension which embodies both individual and group values, attitudes, feelings, and behaviours of the network actors. This is achieved through an investigation of the social order constructed by the interaction of people, organisational elements, and physical workplace environments.

It is well established in the behavioural science literature that the groups with which people are involved in every domain of life (in this case in organisational settings), condition how the world is viewed and made sense of. The NetWorkPlace™ study is concerned with a collective group of people employed in three separate corporations, drawn together into a single network enterprise of cooperating organisations. The investigation is focused within the operational constraints of the network entity, however activities were often shown to be influenced by or contrasted against the individual organisation to which each individual belonged. Holstein and Gubrium (1994: 268) claimed that “practitioners of everyday life are not ‘organizational dopes’, mere extensions of organizational thinking. They exercise interpretive discretion, mediated by complex layerings of interpretive influence.” An important issue to highlight is that within any organisation, there may be several

'realities' existing in parallel. Each one of these is likely to be as valid as the other, depending on the individuals' organisational perspective, personal orientation, and the particular context in which they are situated. The methods of investigation described in Chapter 3 and further outlined in terms of their application later in this chapter of the thesis, are used to uncover these multiple realities.

The various disciplinary insights revealed by the NetWorkPlace™ approach and reported upon in this thesis, highlight the challenges confronting the design professions in the ever expanding horizons associated with the knowledge economy and the network society. Researchers with a practice orientation (Giddens, 1984; Bourdieu, 1977) who have examined the everyday routines that make up organisational life, suggest that all social systems both express, and are expressed in the routines of daily life.

As Schwartzman (1993: 46) explained, such an approach enables the "problematicization of the ways that individuals and groups constitute organizations (and societies) on a daily interactional basis." Goffman (1967) has shown through his concept of the *Interaction Order*, that the organisation of social interaction can be studied in its own right. Garfinkel's ethnomethodological approach is used to concentrate on the highly localised competencies that are constituted in various domains of work. As both Garfinkel's and Sacks' work affirms (Coulon, 1995: 16) "social facts are the accomplishments of the members.....social reality is constantly created by the actors; it is not a pre-existing entity." Much of the interpretive work of members is achieved through their reference to what have been termed, local interpretive resources. These are defined as recognisable categories, familiar vocabularies, organisational missions, professional orientations, group cultures, physical artifacts, and other existing frameworks for assigning meaning.

An indication of the body of research which has come to be known as 'workplace studies' is provided by Bolzoni and Heath (1997) who focus on the socio-interactional organisation of workplace activities. They reported that much of this research draws in various ways from an ethnomethodological approach which places the in-situ accomplished and socially organised character of practical action at the forefront of the analytical agenda. It is appropriate then that investigative and analytical techniques consistent with the epistemological orientation adopted by theorists of the interaction order are utilised to inform the NetWorkPlace™ study.

### 4.3.0 The Specific Context

The role of many organisations has changed substantially in recent years. Mergers, acquisitions, and globalisation influences generally have resulted in organisations that transcend regional and even national boundaries. Inter-organisational relationships such as joint ventures and supply chain networks further blur the lines between traditional corporations and today's entities. The boundaries of the organisational research field and the phenomena of interest began shifting and expanding accordingly more than a decade ago and now encompass contributions from many other disciplines in order to address the complexities of modern organisational life (Stern & Barley, 1996).

This provides the opportunity for researchers in the architectural field to gain access to an expanded range of contexts and knowledge sources through collaboration with other disciplines. Beyond this, it facilitates a wider audience base for the outcomes of architectural research and as is shown in this case, a way to expand the field of influence. In practice, it provides the opportunity for designers to extend their specialist roles and to contribute knowledge and skill to non-traditional audiences through a collaborative process. Such contributions from designers have not generally been sought out by professionals in other disciplines, by managers in organisational settings, or by communities of practice in other fields. As such, the field of architecture remains an under-utilised and in many cases, an under-valued organisational resource.

The process of investigation and the outcomes of the NetWorkPlace™ study provide a way to inform the management discipline and other stakeholders about the contribution that physical workplace design can make towards organisational processes and performance. This is particularly pertinent in view of the interactional requirements of the network context.

As established through the literature reviewed (refer Chapter 2), alliances between organisations are becoming increasingly important in the strategies through which companies and corporations attempt to secure advantages in the marketplace. The concept of supply chain management (SCM) for the purpose of this study, is defined as the integration of key business processes that add value in the provision of products, services, and information, from suppliers through to the end users. Business success in the new network context relies on not only the internal efficiency and productivity of the individual organisation but also on that of its

business partners and the effective relationships between them (Zheng et al, 2000). SCM is a strategy to effectively link all trading partners, spreading responsibility and cost management across the entire supply chain (Premkumar, 2000; Cooper & Slagmulder, 1999) and is intended to facilitate inter-organisational learning, innovation, and continuous improvement (Scott, 2000).

Supply chains are certainly not a new phenomenon, it is however the nature of cooperative interaction between partners in the arrangement which has provided the new context for investigation. Of particular relevance to workplace design, and perhaps the critical notion to grasp concerning supply chain management, is that it relies on human interaction, communication, and cooperation across all parties comprising the chain. Innovation has been defined by the SCOP research team as the development and implementation of new ideas by people who engage in transactions with others over a period of time, within an institutional or organisational context. Innovation is, in these terms, thus embedded in complex patterns of social activity which are located within particular contexts and communities of practice. This notion is consistent with the perspective which underpins the methodological approach of the NetWorkPlace™ study.

As discussed previously (refer Chapter 2), research into supply chains over the past decade has shown a persistent bias in that there has been a distinct focus on the operational and technical aspects, the dominant research method employed has been overwhelmingly quantitative and positivist, and usually conducted from a single disciplinary perspective (Monczka & Morgan, 1997; Parker, 2000; Beckett et al., 2000; Bask, 2001; Kolluru & Meredith, 2001; Burgess et al., 'in press'). Continuation of such a research trend seems to be at odds with many of the findings that the approach has produced. These include consistent reference to a need for better understanding of how human factors in a dynamic social system impact on supply chain performance (Burgess, 2003).

The SCOP project sought to overcome identified biases by exploring a supply chain from a holistic perspective, involving a number of disciplinary specialists and by adopting a qualitative approach. Collaboration between disciplines was seen as a way that researchers can address the complexity of modern inter-organisational networks. Importantly, this approach highlights the involvement of architects and interior designers in the overall research process, together with the acknowledged relevance of the built environment as an organisational support system.

The NetWorkPlace™ study adopts the notion mirrored by contemporary approaches in the profession, that design is a process of social construction (Day, 2003). The objective is to explicate the social, technical, and structural underpinnings of the complex organisational and inter-organisational interactions which can be utilised in the future to inform the workplace design process in this context. The workplace environment is a multi-level, multi-faceted entity held together by complex interactions and relationships. It is comprised of individuals acting as much as possible as free-willed actors, organised together into groups and integrated in social structures involving communities of practice and communities of interest. For the purpose of the study, communities of practice are defined as groups of people connected through work related functions and roles, whereas communities of interest embody groups of people with similar interests, not necessarily including, but also not excluding work related interests. The bounding mechanism in both cases is the medium of human interaction, activity, and the resultant social processes.

#### **4.4.0 The Theoretical Guidelines**

The literature on supply chain management and organisational management in general indicates that unless supply chains can continually innovate in order to maintain a competitive advantage, they may cease to have a commercial relevance. The same body of literature referred to in Chapter 2, also indicates that extensive research has revealed no suitable supply chain management methodology which considers both the technical and social factors impacting upon supply chain performance issues (Burgess & Singh, 2004). It was further concluded from the literature that there is little consensus regarding which theories inform supply chain management generally (Mentzer et al., 2001; Lummus et al., 2001; New, 1997).

In response, the SCOP project aimed to investigate the social and technical factors which impact upon supply chain performance, to understand how these factors interact and how to manage them in order to stimulate innovation across its own supply chain. An investigation undertaken by a working party of senior managers from the customer organisation involved in SCOP, recognised the need to examine both the social issues and the organisational support mechanisms in an attempt to resolve problems in the logistical aspects of their supply chains (Internal SC Report, 2000). This report highlighted the large number of influences which were thought to be impacting on performance and further recognised that these encompassed

various disparate disciplinary areas. Accordingly, a recommendation to initiate further investigations was proposed culminating ultimately in the SCOP project. Such recognition supports the argument that a trans-disciplinary approach to research is necessary in the networked context due to the multiplicity of different inputs and the potential for multiple perceived realities (refer Chapter 3).

There is a paucity of information regarding such collaboration involving the architectural profession in general but as the NetWorkPlace™ study proposes, and as Michelle Rinehart (n/d: 1) from the University of Michigan claimed: “through ..... dialogue, architects will learn that architecture is not an autonomous discipline. They will come to realize the inter-connectedness of knowledge and understand that our real-world problems are interdisciplinary and can only be solved by working together.”

To ensure a robust research process could be guaranteed, the SCOP team sought to utilise the guidance which could be provided by existing theoretical principles. This was achieved by combining two well established fields, that of socio-technical systems (STS) and inter-organisational network (ION) theory. These were considered to be compatible with the research task, the context, and the methodology adopted for two reasons. Firstly, preliminary investigation undertaken by the customer organisation (Internal SC Report, 2000) strongly indicated that both technical and social issues were influencing the inter-organisational interactions. Secondly, a return to the principles of the socio-technical movement has been recommended in previous supply chain research (Butera, 1994), but not known to have ever been implemented. It was concluded therefore that the prospects for successfully implementing supply chain innovations are greatly enhanced by adopting a socio-technical, rather than the narrower technical approach as has been the case in the majority of the early supply chain management research (Al-Mashari & Zairi 2000).

The original socio-technical theories and principles however were developed on a model confined to a single organisation (Emery & Trist, 1973; Emery & Thorsund, 1976; Emery, 1977; Trist, 1991). Due to the nature of supply chains functioning as inter-connected operating systems, the introduction of inter-organisational network (ION) theory addresses interactions across the boundaries of different firms. This has been extended in the NetWorkPlace™ study and the SCOP project to take account of intra-organisational interactions also, because in large organisations, groups and individuals even within the same legal entity often exhibit behaviours



toward each other as if they were from separate firms. This is an important consideration which the supply chain management literature appears to ignore.

The theoretical framework adopted was given the acronym of STIION's (Smith, 2003a; Burgess, 2003) and was formulated by combining socio-technical systems (STS) and inter-organisational network (ION) theory principles, with the inclusion of an additional (I) to encompass intra-organisational networks. It has been well documented (Emery and Emery, 1974) that the participative design concept developed by the humanist movement in the workplace relations field grew out of socio-technical systems (STS) theory. The contemporary participative approaches popular within the design disciplines share many of the principles to come from the STS theoretical base, suggesting a level of compatibility exists with the ontological and epistemological underpinnings of the NetWorkPlace™ study.

This framework provided a sound ideological structure within which to situate the different disciplinary aspects of the research in a way which allowed each to interact with and inform the other. It provided a way to design the research inquiry mode which encompassed both individual disciplinary and host project research objectives to be considered, and both the industry and academic agendas to be pursued without compromise to any of the interest areas. The conceptual STIION framework provided rich opportunities for the research to be undertaken from the perspective of an interpretivist orientation, and in particular for the workplace component, by expanding the range and depth of understanding of factors that shape and define interactions within and across networked organisations.

#### **4.4.1 Rationalisation for the STIION Framework**

Supply chains have been described simply as organisations linked to each other through inter-connected operating systems, which can be analysed as socio-technical systems (Butera, 1994). Socio-technical systems analysis to date appears to have been confined exclusively to operating systems within single organisations. It is obvious however that inter-organisational operating systems such as a supply chain must be understood in the context of multiple linked organisations. Conversely, the study of inter-organisational relations and networks has largely treated individual organisations as homogenous entities or 'black boxes', concentrating on the relationships between them and ignoring the internal structures and processes of each organisation. It follows, that to fully understand inter-

organisational operating systems as socio-technical systems requires that STS theory and ION theory are integrated and further extended to include the relationships and processes within individual firms (Williams, 2003).

The aim of socio-technical analysis is to discover ways of achieving the best match between the requirements of technical production efficiency and the psychological and social needs of people in the workplace. The original formulation of this approach acknowledged that the technical design of production systems usually followed the rationale of scientific management theory, but further recognised that the psychological and social worlds of human beings are organised according to subjective values, beliefs, feelings, and attitudes through their own shared common sense knowledge (Pava, 1986; Pearce & Ravlin, 1987). It is idealistic to presume that technical and social systems can be completely aligned, however socio-technical analysis and design seeks to make them as complementary as possible.

An inter-organisational network is a value creating system of several firms possessing complementary strengths, coordinated through a combination of contractual provisions and mutually beneficial relationships, often orchestrated by a leading member. Effective networks involve an investment in relationships, a sense of mutual benefit, a level of trust, and a level of coordination, all to a degree which is normally absent in competitive market activities.

In contrast to hierarchical structures, successful networks are not held together through formal employment relationships, or managed on the basis of bureaucratic rules and routines. These arrangements challenge conventional organisational theorising which is based on the individual firm as the unit of study. Scholars and practitioners alike need to understand the entire production system in order to properly assess individual and organisational responses in the supply chain context. Interdependence challenges the traditional organisational theorists presumption that there is advantage in controlling resources within the boundaries of a given firm (Williams, 2003).

Alexander (1995) suggested that the major schools of theory generally used to examine organisations which interact in some way, include exchange theory, organisational ecology, contingency theory, and/or transaction cost theory. Further to this, "organisations and inter-organisational systems can be identified as being hierarchical (command based on authority), market (exchange based on price) or solidarity-association (consensus/agreement based on trust)" (Alexander, 1995: 54).

In the 'solidarity' model, coordination and cooperation is the result of a sense of mutual obligation amongst participants.

Compared with markets and single organisational hierarchies, inter-organisational alliances are distinctive because of their reliance on reciprocity, collaboration, complementary inter-dependence, social relationships, and a climate oriented towards mutual gain (Das & Teng, 1998; Alter & Hage, 1993; Larson, 1992). Cooperation can reduce the transaction costs of alliances but organisations tend to judge the quality of inter-organisational network outcomes by the perceived cooperative behaviour of partners as well as by financial success (Dasborough & Sue-Chan, 2002; Hamilton, 2000; Jarillo, 1988).

The mandated organisational frameworks in this research were found to provide the meta-structure for a number of lower order structures comprised of cooperating communities of practice. Enabled by the STIIION theory suggested herein, the NetWorkPlace™ study both acknowledges and goes beyond a consideration of just the formal organisational structures. This is achieved by investigating the norms of behaviour and interaction that are implicitly understood and agreed to by the individual, group, and sub-group members within the network. It is in the role of supporting and facilitating cooperative behaviour that workplace design is able to provide its greatest value-adding contribution to network performance.

#### **4.4.2 Socio-Technical Values**

The objective of socio-technical design has always been the joint optimisation of the social and technical systems (Mumford, 2000; Cherns, 1976 & 1987). It is suggested that a return at least to socio-technical values, objectives, and principals, may provide key insights to help in resolving the inevitable clash between the technical processes and social environments of the new form of networked organisations. "It has frequently been said that the troubles of the modern world are due to a fantastically rapid rate of technological advance coupled with relatively slow social progress" (Hawthorne cited in Hill, 1976:xi). The Tavistock Institute of Human Relations, founded in London in 1946, was comprised of a group of social scientists who were not at all wedded to the ideas of scientific management with its mechanistic work studies, job evaluations, organisational charts, and a focus on machine-oriented tasks.

As a result of the pioneering work of Eric Trist and Fred Emery, the Tavistock group developed the concept that the social organisation for a given task was at least as important as the arrangement of the technical equipment. This was based on the belief that men were not employed merely to mind machines, but that machines were an extension of the minds and limbs of the men who had responsibility for the tasks. This is the philosophy which underlies the development of the concept of socio-technical systems as a means of analysing work processes with a view to improving organisational performance. Socio-technical research and attempts to introduce it into industry applications has continued for the past sixty years in Europe, Britain, and the USA. In Australia it has been pursued principally through the work of Fred and Marilyn Emery at the Centre for Continuing Education in Canberra.

Many of the early attempts to introduce socio-technical systems into organisational life were unsuccessful due to the Taylorist-management regimes which gave validity to the 'bureaucratic' structures of the times. Any hint of a humanistic approach appeared to pose too great a threat to management control of the workforce in many organisational situations (Emery, 1977; Emery & Thorsund; 1976). This continued on into the 1980's and early 1990's due mainly to the management trends associated with the economic rationalism movement, dominated by cost-cutting and staff reductions, business process re-engineering, and the lean production concept, all of which paid scant attention to human needs (van Eijnatten & van der Zwaan, 1998). However, as Mumford (2000: 44) noted, "socio-technical theory continues to be of interest to researchers". This is reinforced by reports that the Scandinavians and the Dutch are working towards the development of an approach called Modern Socio-Technical Theory which aims to simplify production systems (Mumford, 2000; Adler & Docherty, 1998).

Two distinct forms of resistance to the democratisation of work have occurred in the past. Workers believed that any management initiated changes must naturally be for the worse, while management, usually engineers and technologists, saw democracy as a threat to their position and status. This sense of mutual distrust appears to have improved little over time. An important insight reported by Mumford (2000: 38) indicated "that self-managing groups separated by space and time have more difficulty in coordinating and controlling their activities than those organized bureaucratically. They require excellent information systems to assist their self management." But as is shown in the NetWorkPlace™ study, the latest

technology alone is not enough, trust is an important corollary to the implementation of information systems.

The organisational literature indicates a strong recognition, at least in developed western countries, that innovative organisations require highly skilled groups who can work as members of high performance teams. This suggests the ‘flattening’ of many organisational hierarchies, with much more autonomy present in the workforce ranks. A reintroduction of socio-technical principals and objectives relative to the ‘humanising’ of work and the presence of a true ‘democracy’ in the workplace is gaining momentum in the age of the new technological revolution (Smith, 2003b).

As the effects of globalisation increase and the introduction of advanced technologies produces new organisational forms, the most important contribution that socio-technical design makes to the NetWorkPlace™ study resides in the recognition of such a human-centered value system. The design professions at large are contributing to the development of this philosophy through the participative and human focused design approaches which continue to be promoted in contemporary design literature (refer Chapter 2).

#### **4.4.3 Dealing with the Investigative Complexity**

As soon as ‘people’ are introduced into an equation, the problem becomes complex. “Design, more often than not, is a complex problem” (Frascara, 2002a: 37). In the case of the NetWorkPlace™ study, the preliminary stages of defining the network and its parameters required that a general systems theory view was adopted. A system is defined by Bullock and Trombley (1999: 855) as “a group of related elements organized to achieve a purpose”. The advantage of a systems approach to the study of physical and social systems is that it enables complex and dynamic situations to be identified and understood. In order to identify the NetWorkPlace™ system it was necessary to distinguish the boundaries of the research entity by identifying the network structure and its characteristics. The investigation then followed a strictly case specific empirical data gathering approach firmly embedded in methods associated with the social science paradigm.

Amaral and Ottino (2003) suggested that there are significant challenges faced by all scientists studying complex systems. They claimed that complex systems remains an ill-defined area of study and requires both augmentation of the existing conceptual frameworks and the development of new tools. Their differentiation

between the terms 'simple, complicated, and complex' is used as the basis for classifying the NetWorkPlace™ study as an investigation of a complex system by virtue of the network of structural ties and social relations inherent in both the intra- and inter-organisational connections (Amaral & Ottino, 2003: 2):

- Simple systems are defined as having a small number of components which act according to well understood laws.
- Complicated systems have a large number of components which have well defined roles and are governed by well understood rules. Complicated systems have a limited range of responses to external or environmental changes.
- Complex systems, typically but not necessarily, have a large number of components which may act according to rules that may change over time and that may not be well understood. The connectivity of the components may be quite flexible and the roles may be fluid. For complex systems, robustness is achieved by enabling the parts to adapt and adopt different roles. A social system typically fits into this category.

The random formats and lattice arrangements of traditional network theory utilise the predictive capabilities of mathematical probability. This is but one example that, from a designers perspective, there have not yet been developed adequate frameworks within which to study the qualitative interactions amongst units comprising 'real world' complex systems such as the social communities encountered in organisations (Wasserman & Faust, 1994; Watts, 1999; Girvan & Newman, 2002; Newman, 2003).

It is suggested that what is of fundamental importance is an understanding of both the structure and behaviour of the particular environment or ecosystem under investigation. Based on the empirical validity provided by the data and the emergent ideas revealed through the analysis process, the NetWorkPlace™ study thus utilises existing theories and principles where they are found to be applicable and develops new tools and explanatory models as understanding of this network context unfolds.

#### **4.4.4 Modification of the Socio-Technical Approach**

A strong reliance throughout the discussion has been placed on the ability that socio-technical systems (STS) theory has in providing a comprehensive basis for a

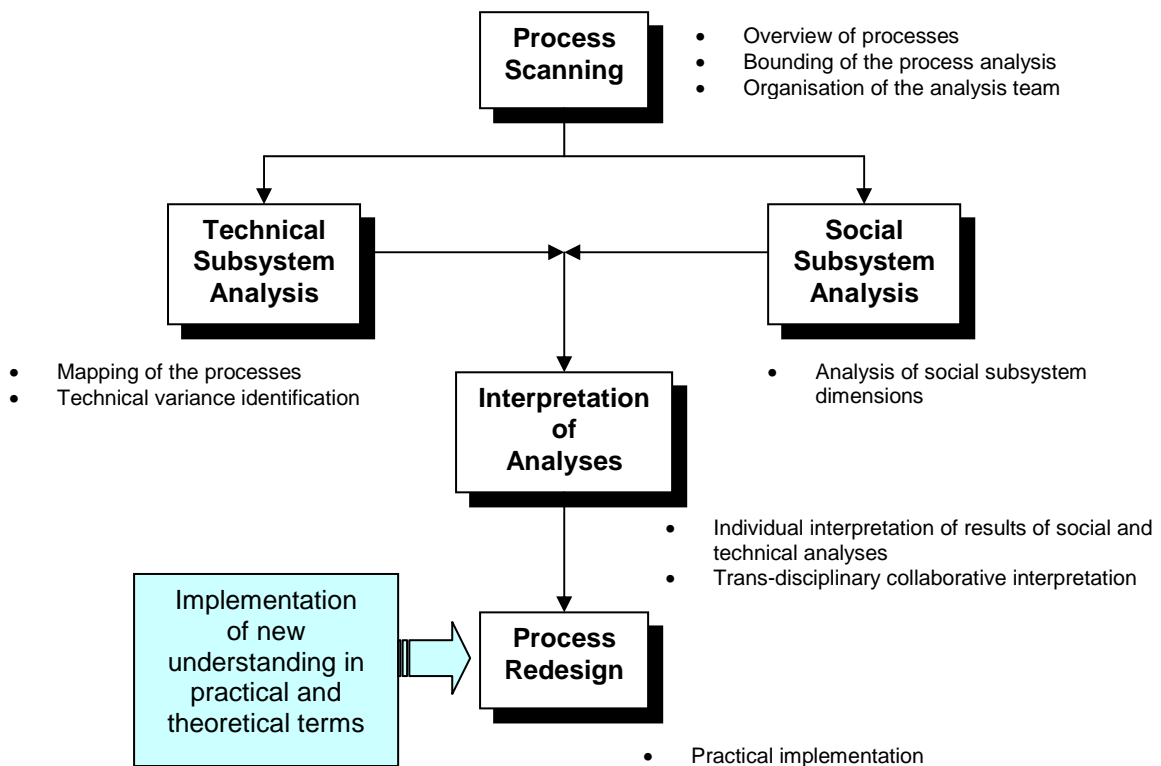
structured analysis of complex processes which embody human factors and activity (Keating et al., 2001). Developed in the English coalfields through intensive research into the longwall method of coal mining more than fifty years ago (Trist & Bamforth, 1951), STS remains as a recognised effective system based methodology for the joint optimisation of both the technical and social aspects of the work process. The technical system is comprised of the structures and the tools necessary to perform the work (Fox, 1995) whilst the beliefs, attitudes, and relationships between individuals and groups comprises the social system in the work setting (Pasmore & Sherwood, 1988).

STS has in the past provided the foundation for process re-design in many settings including manufacturing (Taylor & Felten, 1993), computer operations and information technology (Shani & Sena, 1994), and office technology (Keating et al., 2001). An apparent pre-dominance of work within information technology related settings is not surprising given that the most recent technological revolution has been due to the advent of the computer and its (perceived) capacity to 'replace' the human element in many repetitive task and process related activities. However, the effectiveness of STS in dealing with knowledge intensive work and collaborative, non linear processes has been questioned by Adler and Docherty (1998).

The response has been a 'modified' socio-technical systems approach denoted as 'MoSTS' (Keating et al., 2001) which specifically acknowledges the non-linearity of knowledge intensive work together with the social influences on the overall interactional and technological processes. Nadler and Tushman (1997) contended that traditional business process re-engineering efforts have concentrated exclusively on the technical aspects of work and insist that no re-design can be implemented without considering the impact on individual people and collective groups.

The following diagram (refer Fig 4.1) indicates how the MoSTS methodology has been utilised to guide the investigative process of the NetWorkPlace™ study, in a way consistent with the aforementioned claims of adopting the value principles embedded in a socio-technical systems approach. Scanning is described in the socio-technical literature as a way to gain an overall understanding of the organisational processes. For the purpose of this research, scanning enabled the various disciplinary components to be initially identified and later refined, the boundaries of the network enterprise processes to be established, and to orient the

research team to the organisational environments and the network context. Thus an overall perspective was gained prior to any detailed investigation being attempted.



**Fig. 4.1 The 'MoSTS' Methodology**  
(adapted from Keating, 2001: 39)

The supply chain operations reference methodology (SCOR) utilised in the early stage of the study (refer Section 4.6) enabled both the technical and social processes to be identified and mapped. This consolidated the identification of the disciplines involved in the overall project and in parallel with a consideration of the socio-technical principles outlined previously, enabled the Interview Kits (refer Appendix 4.1) to be compiled in a manner compliant with the STS principals. This approach ensured that both technical and social aspects of the network were addressed.

The traditional STS approach considers only those components of the social system associated with the technical processes. The MoSTS methodology does not confine the social sub-system to the technical processes alone, but enables an examination of the broader organisational aspects which affect the social system and thus the



performance of the entire system. This translates for the NetWorkPlace™ study into a consideration of the key dimensions of the individual organisations together with the network structure, and which in short can be defined as ‘the context’ within which the investigation was undertaken. The study thus represents a holistic approach and a robust accounting for all of the issues impacting on the design of the physical environment by encompassing:

- ❑ key mechanisms and supporting infrastructure which facilitates the social processes,
- ❑ social dynamics of the interactional processes, and
- ❑ other organisational issues emerging as a result of the trans-disciplinary investigation which may not otherwise be made visible.

#### **4.4.5 Application of MoSTS to NetWorkPlace™ Approach**

The detailed investigation was achieved through both formal and informal discussions with organisational members at all hierarchical levels and in various key operational positions, through the observation of processes and interactions; and through a comprehensive review of corporate documents. The various components which were of specific interest to and identified as directly influencing the NetWorkPlace™ analysis, together with the other disciplinary insights which informed the study are outlined fully in Chapter 5.

The product of the combined technical and social sub-system analysis identifies the categories, constructs, and elements to emerge from the data (refer Table 5.8) and provides the basis for the interpretation of the key characteristics and dynamics of the system. Further informed by a holistic view of the total system, provided through the collaborative iteration process undertaken amongst the SCOP research team members, implications which had a specific impact on the spatial dimensions of the network were able to be made explicit and comprehensible.

The modified STS approach defined as MoSTS (Keating et al., 2001) was adopted in principle to structure the investigation and serve as the over-arching ideology for the NetWorkPlace™ study’s methodology. The approach was not adopted nor applied in a prescriptive, linear manner because the inherent complexities of the organisational networks and incumbent social systems encountered in this case study dictated that a degree of flexibility was required.

Extending traditional STS methodology to encompass a greater range of network and organisational issues impacting on the technical and social systems ensured that a full and comprehensive contextual approach was achieved. This proved to be an effective framework within which to view the network from a holistic perspective, to gain a full understanding of the contextual issues, and to orient the various trans-disciplinary implications which emerged from the process.

#### **4.5.0 The NetWorkPlace™ Case Study Overview**

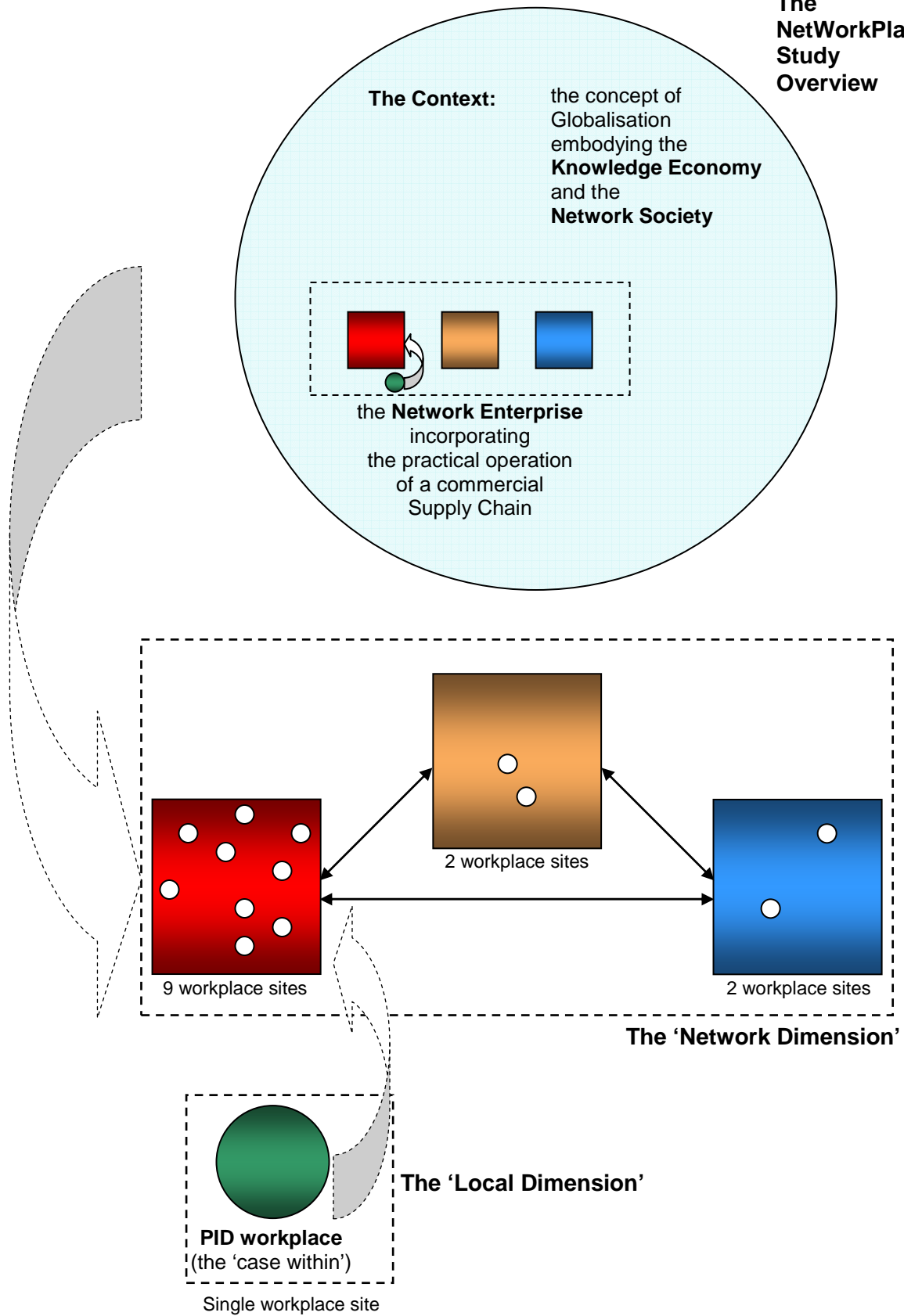
This case is characterised by what Yin (1993; 2003) described as exploratory and is consistent with Stake's (1994) bounded system, intrinsic case study approach. It was a specific requirement of the study participant organisations that they not be identified by name and they are therefore referred to throughout the thesis as the customer **[C]**, the supplier **[S]**, and the transport provider **[T]**.

The NetWorkPlace™ study is comprised of two distinct components denoted as the '**Network Dimension**' and the '**Local Dimension**' (refer Fig. 3.3). These were undertaken independently of each other (refer Chapters 5 & 6) however as the later discussion reveals, are highly inter-related and together provide a more comprehensive assessment of the case than would have been possible without the benefit of the cumulative perspective.

The 'Network Dimension' consists of all the participating organisations: **[C]**, **[S]**, and **[T]**, which constitute the network enterprise. This aspect may be considered as a holistic contextual exploration, culminating in the discovery of the major issues embedded in and across the entire gambit of supply chain partners. The 'Local Dimension' provided the opportunity for detailed investigation of a single, specific workplace site within the customer **[C]** organisation.

These were undertaken in parallel and although linked, there were no interdependent conditions prevailing which dictated the need for them to be done as either sequential or concurrent processes. There was however a degree of overlap in the timeframes within which the investigations were undertaken, and the conditions for each dimension are thus deemed to be consistent in relative terms.

A diagrammatic illustration (refer Fig. 4.2) indicating the relationship between the two dimensions and a brief descriptive overview of each follows.



**Fig. 4.2 The NetWorkPlace™ Case Study Context and Dimensions**

### The '**Network Dimension**' :

This aspect of the NetWorkPlace™ study involved a cross-sectional, trans-disciplinary investigation of the overall network. It was undertaken in collaboration with and as an integral part of the SCOP project which examined innovation in a supply chain context. The study encompassed the interviewing of thirty two (32) key participants, located in three (3) separate organisations and spread across thirteen (13) individual workplace sites. Content analysis of the empirically grounded data from the interviews was undertaken. Interview transcripts were subjected to a comprehensive qualitative coding and categorisation procedure in order to establish the major issues, as defined by respondents, to emerge from the study.

Conclusions were drawn only after an extensive iteration process was undertaken with the other disciplinary researchers of SCOP in order to then incorporate and/or consider alternative views and additional insights into the NetWorkPlace™ interpretations.

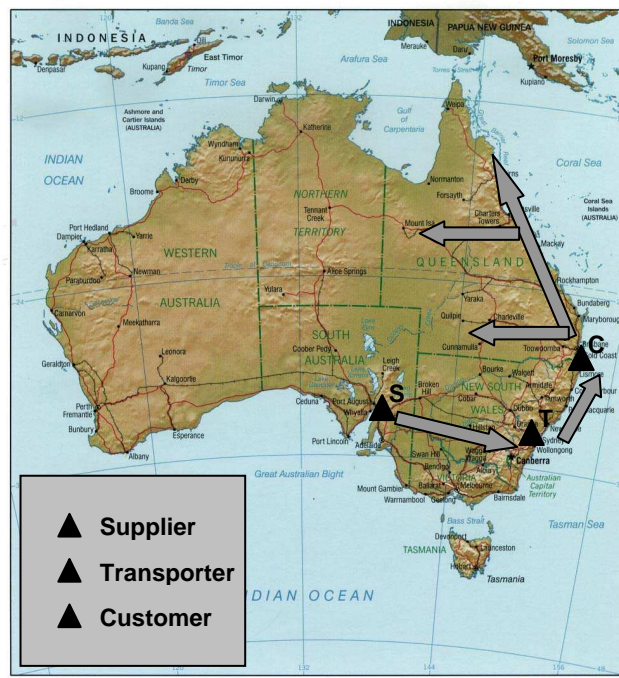
### The '**Local Dimension**' (subtitled 'The Case Within') :

This aspect comprised a longitudinal investigation of a single workplace site within the customer **[C]** organisation of the supply chain, undertaken over a two year period. This site was significant to the overall investigation as it represented the location of an innovative workplace design implementation. The design solution was conceived through a participative process in direct response to the needs of the members. The design did not match the corporate standard fit-out. The investigation examined the short history of the site and in so doing revealed telling insights into the workings of the organisation. The site accommodated fourteen (14) 'knowledge workers' named collectively (for the purposes of the study) as PID (Process Improvement Division). PID provided a professional advisory service to the entire organisation but importantly, were also directly involved in the supply chain which was the focus of the study's 'Network Dimension'.

The development, occupation, and ultimate demise of the workplace design enabled attention to be focused on not only the person-person and person-environment interactions, but also on the functioning of the organisational power dynamics, rules, and policies, an understanding of which were critical to the outcomes of the overall NetWorkPlace™ study.

#### 4.6.0 The Scope of the NetWorkPlace™ Study

The inter-organisational network (supply chain) which is the subject of this investigation extends a distance of over 12,000 kilometres. It encompasses the casting and rolling of steel components in Whyalla, South Australia, which are then transported for assembly and storage in Brisbane, and finally, installation throughout the State of Queensland. The arrows indicated on the diagram below (refer Fig. 4.3) depict the flow of products from origin to destination. In terms of the investigation undertaken, the more important information flows (process interactions) are identified and illustrated in the NetWorkPlace™ Network Diagram (refer Fig. 4.8). These interactions are further detailed and listed in The NetWorkPlace™ Interaction Matrix and Process Chart (refer Table 4.2).



**Fig. 4.3 The Extent of the Physical Supply Chain**  
Background Image Reproduced by permission - SCOP

The commercial organisations involved are significant identities in Australian industry. The supplier **[S]** specialises in the steel manufacturing sector, the customer **[C]** in heavy engineering infrastructure provision and haulage services, and the transporter **[T]** in a range of inter-modal services. The customer organisation, with administration headquarters in Brisbane, is a government owned corporation (GOC) with approximately 12,000 employees in total, an annual revenue of \$A2.4b, and an asset base of \$A7b. The supplier organisation with administration

offices based in Adelaide and a manufacturing plant located in Whyalla, is a publicly listed company with approximately 7,000 employees in total, an annual revenue of \$A2.9b, and an asset base of \$A2.6b. The third member organisation is a national rail transport operator based in Sydney. It is a wholly owned subsidiary of a larger Pty Ltd parent company which has a significant presence in all modes of the Australian transport and logistics industry.

The actual supply chain investigated is one of the many networks in which the subject organisations are involved, however it was able to be isolated as a particular case because the employees involved in the study as participants/respondents were dedicated to the functions associated with that particular chain. The SCOP chain encompasses various sections and divisions from within the three larger organisations, which collectively comprise the single network entity for the purpose of carrying out a specific business operation. It is not unusual for large organisations to have involvement in a number of both related and unrelated supply chains as part of their normal business operations.

The relevant point for this study is however that the network being investigated is comprised of an established alliance between (parts of) three legally independent trading partners. The total number of people involved in the SCOP chain is almost impossible to ascertain accurately because of the indirect cross-functional roles inherent in large organisations. The best estimate that could be extracted from the participating organisations indicates that in the order of several hundred people are involved in one way or another with the functioning of this supply chain. For the purpose of this research the key informants were identified and it is those parts of the organisations which have direct interaction and inter-dependencies for this particular supply chain which have been investigated. This did not preclude however, the consideration of other organisational aspects and components which had an impact on the social and process interactions.

The SCOP research was conducted over a two year period by a team comprising industry practitioners from the participating corporations and academic researchers from diverse disciplines, representing four different universities including the Queensland University of Technology, the University of Queensland, Griffith University, and the Royal Melbourne Institute of Technology University. The very nature of the collaborative research effort between various disciplines greatly enhanced the scope and richness of the research outcomes. The NetWorkPlace™ study constituted an integral and integrated component of the SCOP study and thus

reporting on both the process and the outcomes involves a considerable amount of reference to the activities and insights provided by the host project.

Within the trans-disciplinary collaborative research environment provided by SCOP, inclusion of the NetWorkPlace™ study acknowledges the physical workplace as an essential mechanism to both directly support and sustain the supply chain's social networks and technical infrastructure. The role of the architectural component was to explore the redefined spatial dimensions of this previously uncharted context. The overall aim was to investigate what roles the 'space of place' and the 'space of flows' played in either enhancing or inhibiting inter-organisational interaction and subsequently the supply chain processes, across the different settings within the networked business context. The NetWorkPlace™ study thus sought to develop an understanding of the networked organisational phenomenon and in so doing, a way of interrogation which could be utilised now and into the future to inform the workplace design process within this and similar contexts.

The complexity of a network context demands that designers understand the nature of the relationships associated with both the social and technical interactional processes within such a framework. The research thus looked to the structural components of the supply chain and to the subjective experience of people being-at-work in a networked context for a deeper understanding in order to inform the workplace design process. It has been proposed from Castells' (2000) theory that socio-spatial forms and processes are created and enacted within the dynamics of the overall structure provided by the network entity. Workplace design in the context outlined must therefore embody both a subjective and objective perspective. Thus space cannot be defined without reference to the social practices and processes together with the structural characteristics and influences within case specific organisations and inter-organisational networks as was investigated through the NetWorkPlace™ study.

This case enabled an exploration of the methods and strategies the members of networked organisations employ in order to reconcile the historically rooted spatial organisation of common experience, the 'space of place', with their interpretations of the 'space of flows', Castells' concept of the dominant spatial manifestation of power and function. This duality of spatial dimension creates the theoretical context within which the practical operationalisation of this thesis has been explored.

## **4.7.0 Identifying the Disciplines in this Case**

In order to identify the key research areas required to fully investigate the interactions involved within this inter-organisational network, the first task was to isolate and understand the processes which constituted the supply chain. From this, the critical functional and structural inter-dependencies were analysed in order to evaluate which disciplinary specialists were required to undertake the collaborative investigation within the STIION framework proposed. Initial identification of the network interactions was achieved through a comprehensive consultation process with organisational managers and then documented using a proprietary 'supply chain operations reference' software tool known as SCOR.

### **4.7.1 The Method Employed**

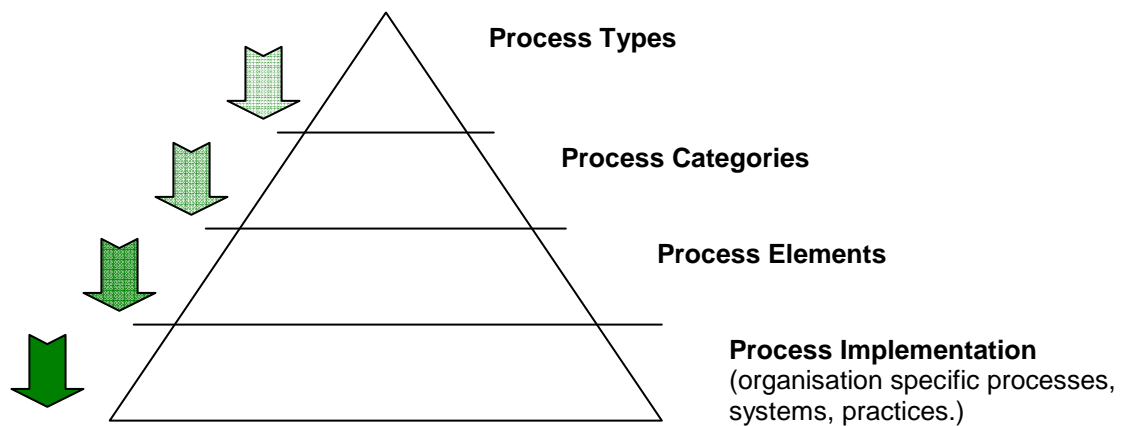
Developed by the Supply Chain Council (SCC) comprising over 770 international member organisations, the supply chain operations reference (SCOR) process was the first cross-industry framework claiming to have the capacity for evaluating enterprise-wide supply chain performance and management. Released initially in Europe in February 1997, SCOR represented the culmination of 12 months intensive work by 70 world-class manufacturers from diverse industry segments. The following description of the SCOR methodology is based on that outlined by Gordon Stewart (1997: 62-67) and information supplied by the Supply Chain Council Inc based in Pittsburgh, Pennsylvania, in relation to SCOR Version 5.0.

SCOR has been positioned by the SCC as the industry standard for describing and mapping operational processes and is supported by members as the current reference model for supply chain management (Huan et al., 2004). It claims to bring order to the diverse activities that make up the supply chain, and to provide common terminology and standard process descriptions. SCOR is designed to enable organisations to communicate, compare, and develop new or improved supply chain practices from companies both within and outside of their industry segment by encompassing:

- ❑ all customer interactions, from order entry through to paid invoice.
- ❑ all physical material transactions, from the supplier's supplier to the customer's customer, including field service logistics.
- ❑ all market interactions, from the understanding of aggregate demand to the fulfillment of each order.

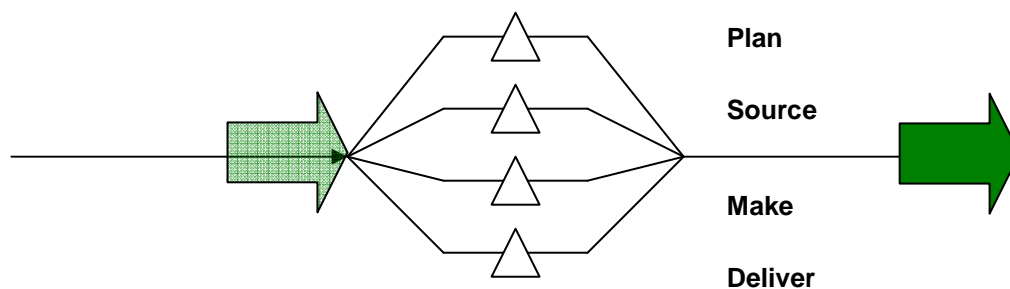


SCOR is applied consecutively at four levels of complexity within the chain, from the overall long term strategic view of the network down to organisation specific processes and practices. This hierarchy is illustrated below (refer Fig. 4.4) indicating the identification of high-level process 'types', through to 'categorisation' of processes, process 'elements', and finally the analysis and implementation of organisation specific practices. Each level is subjected to a four step deconstruction process leading to the explication of increasingly more specific operational detail.



**Fig. 4.4 SCOR Hierarchical Levels**

Within the four hierarchical level structure, it is further divided into four basic processes of analysis – 'plan', 'source', 'make', and 'deliver' (refer Fig. 4.5). Broadly defined, these include managing supply and demand (plan); sourcing raw materials and parts (source); manufacturing and assembly (make); warehousing and inventory tracking, order entry and order management, distribution across all channels, and delivery to the customer (deliver).



**Fig. 4.5 SCOR Processes of Analysis**

The development of SCOR was in response to the need identified by the SCC, for a dynamic analysis, prioritisation, and focusing tool, capable of using both tacit or subjective information as well as explicit or quantifiable information. This knowledge-based approach to managing the value stream across a network is the logical extension to a phenomenon alluded to by a growing group of authors who believe organisations should become knowledge-creating companies (Nonaka and Takeuchi, 1995; Quinn, 1992; Toffler, 1990). Drucker (1993) argued that in the information age, knowledge is not just a factor of production like labour or capital, but is the most meaningful resource available and that in this new society based on knowledge and networks, the 'knowledge worker' is the single greatest asset. He included the 'knowledge executive' who allocates knowledge to productive use, just as the capitalist allocated capital to productive use. Nonaka and Takeuchi (1995: 7) took this argument further and noted that, "the realisation that knowledge is the new competitive resource has hit the West like lightning ..... despite all the attention by leading observers of business and society, none of them has really examined the mechanisms and processes by which knowledge is created."

#### **4.7.2 The Disciplines Defined**

By adopting SCOR as a tool to underpin the identification and analysis of the supply chain processes, it was possible to undertake research not only within a single company environment, but more critically, with a focus on the value stream in a networked supply chain setting. The real benefit gained in using SCOR from the perspective of this study, was that it enabled the supply chain processes to be comprehensively defined. This assisted the research by making it clear who the key informants across the network were, and thus who were the most appropriate people to interview.

A subsidiary benefit is that it helped to build trust and rapport between the researchers, and between the researchers and those managers and employees initially consulted for advice on the supply chain processes. As Lincoln and Guba (1985) highlight, building trustworthiness is vital to generate good findings in naturalistic research. Most importantly for the investigative phase, efforts were able to be focused towards specific disciplinary areas by clearly establishing the processes and their perceived inter-dependencies. The disciplinary streams which were most closely associated with the processes and also recommended by a previous investigation undertaken by organisation [C] (Internal SC Report, 2000) as

warranting further inquiry were thus identified. The disciplines which constituted the SCOP research effort are listed following, adjacent to the topic areas focused on by each (refer Table 4.1):

**Table 4.1 Disciplinary Streams and Topic Areas**

<b>Disciplines</b>	<b>Topic Areas</b>
Supply Chain Management	identification and integration of supply chain processes
Legal	corporate governance
Knowledge Management and Information Technology	information systems and technology
Organisational Behaviour	social network relations
Architectural and Interior Design	spatial relations and physical environments

A brief description of the research areas which each of the disciplinary areas focused upon and which led to the development of the NetWorkPlace™ Trans-Disciplinary Investigative Model (Refer Fig. 4.6) follows.

**Supply Chain Management Discipline:**

As suggested by the literature, defining supply chain processes in a consistent manner which the members across the network are able to comprehend, is a challenging task and in this case was achieved by application of the SCOR methodology (Zhengping et al., 2002). This enabled the key components of the supply chain and its processes to be identified and represented in a consistent manner across the entire network. The challenge for this discipline was to gain an understanding of the key inter-dependencies across the chain in order to evaluate the various enablers and constraints to efficient functioning from a holistic perspective. Integration of network processes with the independent, individual organisational requirements was also a primary consideration. Collaboration with the activities of this discipline enabled the NetWorkPlace™ research component to gain a clear understanding of the chain's inter-dependencies and thus more easily identify opportunities for the physical design of the workplace to provide a supporting role in pursuing network objectives.

**Legal Discipline:**

The task for the legal discipline was to identify how the individual organisations within the network were formally constituted in order to evaluate the legal enablers and constraints imposed on the inter-organisational operations and relationships. The governance component encompassed the range of issues relating to statutory

obligations, contractual arrangements, hierarchical structures, and the general management and decision making policies and processes enmeshed in the web of relationships within and across the organisations. This aspect perhaps more than any other influences the structural and contractual relationships which individual organisations may enter into and which in turn influence the type and amount of information which organisations are officially permitted to disclose and/or share with allied partners. It was particularly informative for the NetWorkPlace™ component because it enabled a greater understanding of the structural constraints inherent in the network, together with how the legal and legislative requirements influenced organisational politics.

#### **Knowledge Management and Information Technology Disciplines:**

This aspect of the investigation was responsible for the identification and analysis of the critical information and technology components of the network. Enterprise-wide information systems and technology interventions can be immensely complex areas to understand but they have a critical link to both organisational operations and politics. In this case the main focus of the research centered on what and how information was shared, both formally and informally, what technologies were utilised, and to what extent they were compatible across the network. This informed the NetWorkPlace™ research through an understanding of the preferred modes of communication and the interface difficulties experienced between humans and technology in this case.

#### **Organisational Behaviour Discipline:**

A critical component integral to the study focus centered on the social networks interacting and sharing information across the chain. The network relations component concentrated on individual and group interaction in order to elicit an understanding of the implications for communication and cooperation within and across the organisational boundaries. From a theoretical perspective, inter-organisational networks (ION's) are described as groups of legally separate communities connected to each other by exchange relationships. These can be formal contractual arrangements focused on complementary goals or informal relationships tied by common bonds, sustained over time (Williams, 2003). Such relationships have been shown to have a profound influence on supply chain management, due mainly to the degree of cooperation between members (Das & Teng, 1997). Social networks have also been shown to be important influences in the acceptance and diffusion of innovation by individual members in firms (Rogers,

2003; Stephenson, 2000) and thus have particular relevance for practical intervention and the introduction of changes into the actual supply chain. The findings from this discipline were most informative for the NetWorkPlace™ research in that it sought to explore the type and nature of both existing and desired future relationships in order to inform management practices and in turn the design of the types of physical environments required across the supply chain.

#### **Architectural and Interior Design Discipline:**

Numerous commentators (refer Chapter 2) have contributed to the discourse on the effectiveness of the physical workplace as a management tool and in the context of this study, workplace design was considered as one of the essential mechanisms to both directly support and sustain the network's social and technical infrastructure. Through the NetWorkPlace™ study, the workplace environment was explored in terms of its role in enabling supply chain processes, in facilitating social network relations, and in contributing to the experience of 'being-at-work' within the conceptual dimensions of the 'space of place' and the 'space of flows' discussed previously (refer Chapter 2). The workplace component constitutes the focus of the NetWorkPlace™ study and completes the description of the disciplines assembled to undertake the collaborative SCOP project.

### **4.8.0 The Trans-Disciplinary Investigative Model**

It became apparent that a way to coordinate the activities of the different disciplines was required. This was achieved through the development of the NetWorkPlace™ Trans-Disciplinary Investigative Model (refer Fig. 4.6). The model was formulated to guide the research effort by situating the multi-disciplinary components into a related and structured investigative framework.

The model represents a collaborative process comprised of the various fields of identified expertise involved during both the investigation and analysis phases of the study. In the form presented, the model is centered on the architectural and interior design disciplines as the focus of the NetWorkPlace™ study, however is adaptable to suit other specialised orientations with only minor adjustment, if and where required.

The NetWorkPlace™ Trans-Disciplinary Investigative Model (refer Fig. 4.6) indicates a contribution from and a collaboration between both academic researchers and industry practitioners. It is suggested that such collaboration

benefits both academic and industry sectors in aiding to break down some of the entrenched barriers inherent in these types of relationships (Smith, 2003b). This was an important aspect of the research partnership undertaken between the NetWorkPlace™ study and the SCOP project, however the nature of the interdependency is relative to the context being investigated and is liable to vary for different cases.

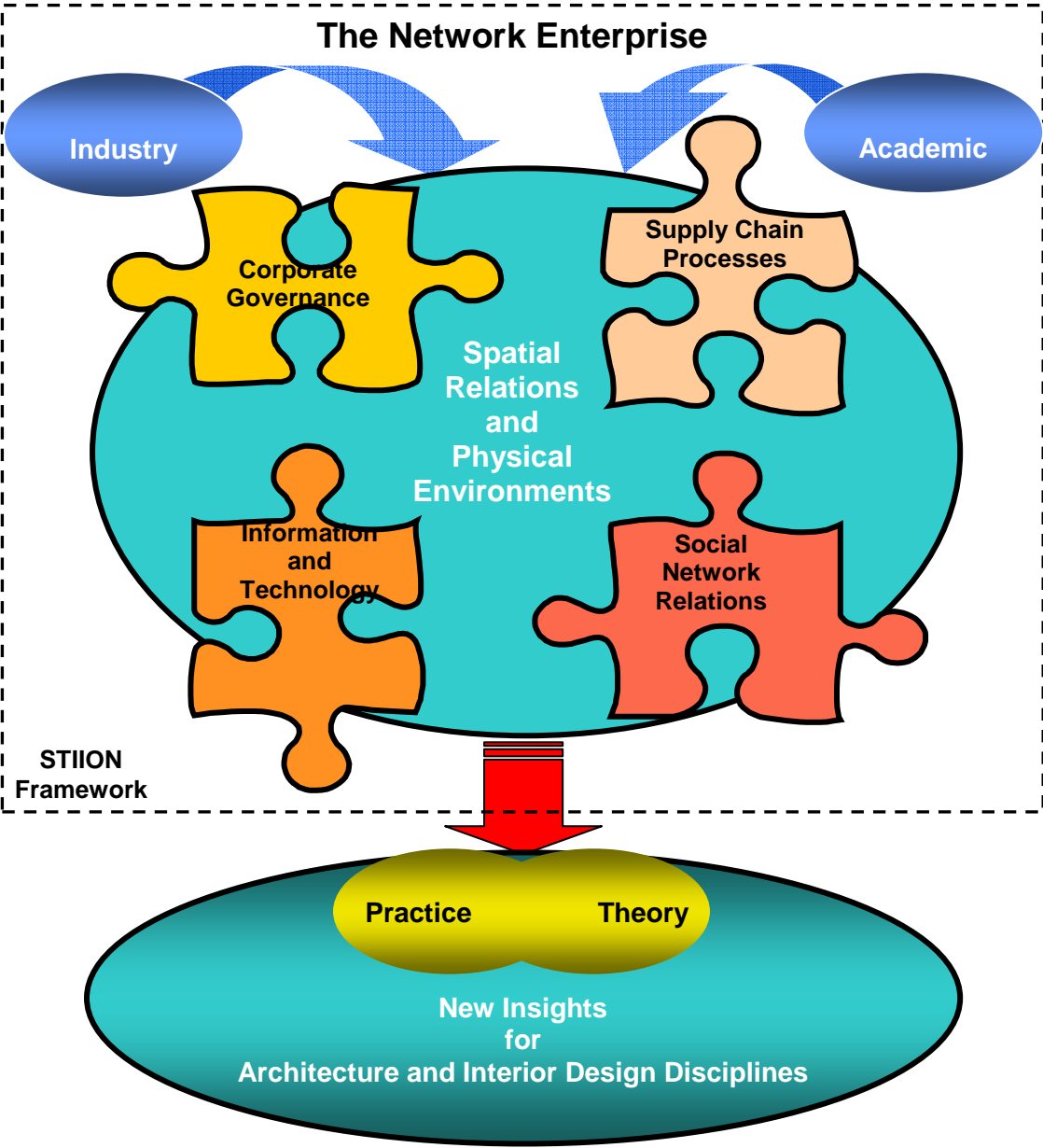


Fig. 4.6 The NetWorkPlace™ Trans-Disciplinary Investigative Model

The inclusion of both individual and collaborative aspects in the research effort served to further inform each of the disciplines through an iterative and reflective process, and through the insights brought forward by the alternative views on particular issues or problem areas revealed by the investigation. This approach was the basis of achieving common understandings and consensus among team members. It also provided an expanded knowledge base and a more informed basis on which each of the individual researchers could contribute to their individual disciplinary fields. The processes embedded in the NetWorkPlace™ Trans-Disciplinary Investigative Model (refer Fig. 4.6) are represented in the linear format of the Collaborative Process Model (refer Fig. 4.7) following. The practical application of this model in the research task is however, far from a linear process, with many iterations often being required at each phase. The linear representation is not intended to be prescriptive in absolute terms, but indicative of the overall process employed throughout the study.

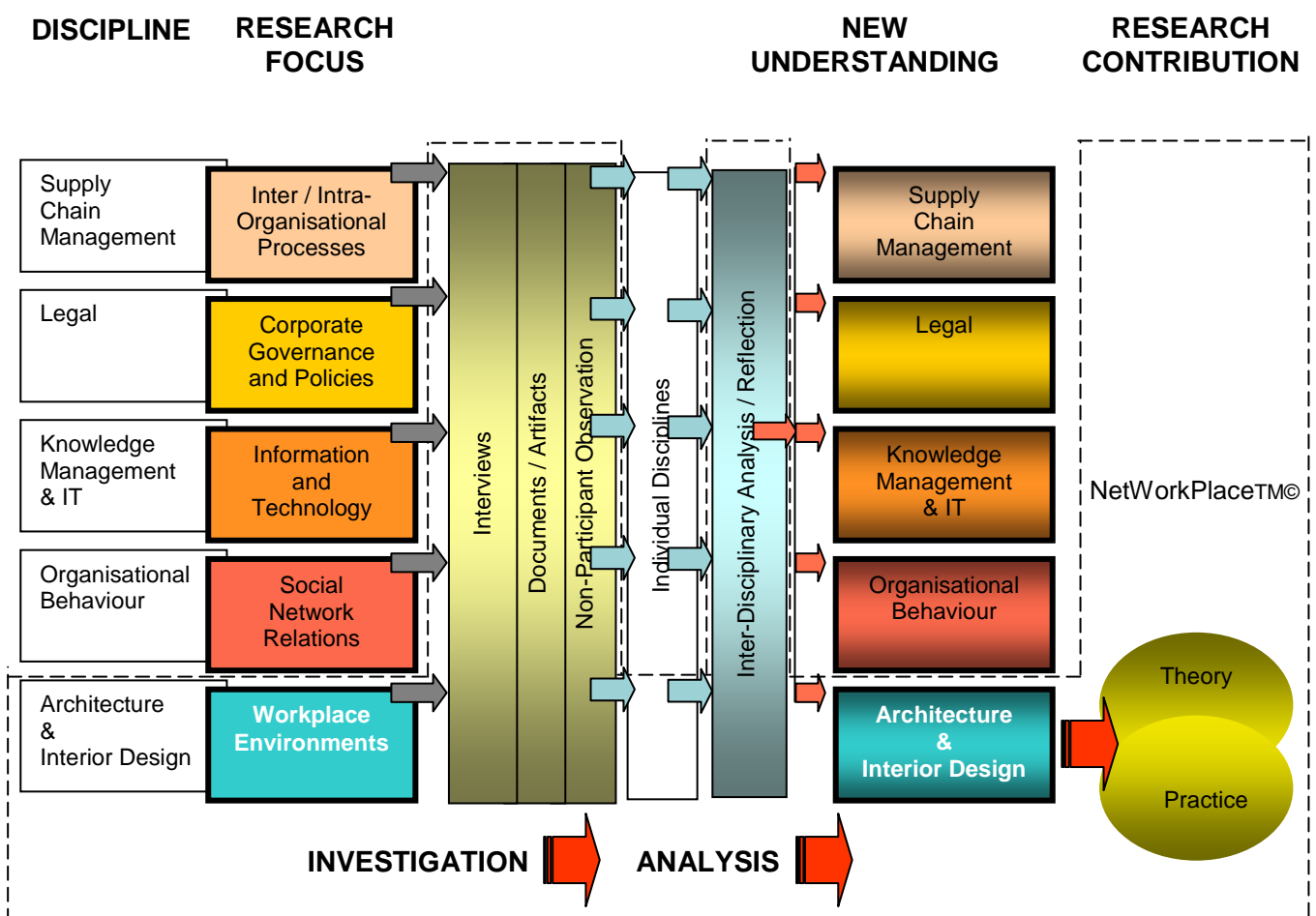


Fig. 4.7 The Collaborative Process Model

Utilisation of the SCOR methodology enabled both the SCOP project and the NetWorkPlace™ study to be accurately scoped and the precise research boundaries established by defining the network entity's processes, supporting mechanisms, and interdependencies. The applicability of SCOR to the NetWorkPlace™ study, including the difficulty encountered in a fieldwork application together with a proposed alternative approach are discussed following.

#### **4.8.1 Refining the Process Mechanism**

For the purposes of this study, SCOR provided a satisfactory mechanism firstly to identify the SCOP research streams and secondly for each of the different disciplinary researchers to gain a comprehensive understanding of the processes and interactions involved in the total supply chain. It is however a relatively specialised and time consuming tool, requiring a high level of expertise to achieve meaningful outcomes. It is also heavily reliant on a thorough consultation process being undertaken to ensure an accurate computer model is constructed. It was found that most participants of the study exposed to SCOR, particularly at the operational levels, were more comfortable with terms and symbols which closely resembled their working reality, compared to those assigned by the proprietary methodology. The SCOP research team's assessment of the applicability and practicality of SCOR concurs with Gardner and Cooper's (2003: 37) claim that in their opinion, "there does not yet exist a universal set of mapping conventions to represent supply chains." SCOR is perhaps the nearest to a de-facto standard currently available, but in this case proved too cumbersome for general application, especially in a practical fieldwork situation. It was necessary therefore as part of the research methodology formulation, for the NetWorkPlace™ study application to develop a technique which had wider understanding and therefore acceptance at an operational level.

To illustrate the point, twenty three (23) charts/process maps were required to be produced in the initial phase of the study to adequately describe the supply chain using the SCOR mapping protocols. A typical example of the SCOR process maps prepared for each of the four hierarchical levels of analysis are included to illustrate the complexity of the process (refer Appendix 4.2). The manner in which the software presents the final charts makes it almost impossible to gain an overview of the supply chain and the usefulness is further diminished by becoming 'lost in the detail'.



## 4.8.2 Development of Alternative Tools

In order to more adequately address the requirements of the design disciplines, a more manageable and widely comprehensible format of process mapping was thus devised for the NetWorkPlace™ study. The tools created for use in this study are comprised of a combination of the NetWorkPlace™ Network Diagram (refer Fig. 4.8) and the NetWorkPlace™ Interaction Matrix and Process Chart (refer Table. 4.2). These proved to be very effective in terms of the research process and it is intended that they be directly applicable to a practical design brief formulation task due to the capability of easily and adequately depicting and describing the supply chain investigated. In this case they were utilised in a manual form but are readily adaptable to a 'software' format for wider distribution and easy accessibility.

The network diagram was based on a traditionally accepted convention for illustrating network relationships of many types and is thus an easily and widely understood representational graphic tool. The primary aim was to represent the node and hub points which depict physical places and relative locations across the network, the product flow of the main supply chain, and the human process interactions required to sustain operations. The interactions shown may be facilitated by technological means indicating the presence of a 'space of flows' or by personal face-to-face meetings in physical settings representing the 'space of place'. The matrix provided a first level analysis and overview of the network processes and relationships with further levels of detail being accessible through the process chart component. Application of this tool in the NetWorkPlace™ investigation indicates strongly that it provides the basis, if not the solution, for a practically oriented and flexible field methodology which could be further extended and/or refined if required.

The NetWorkPlace™ Interaction Matrix is based on a concept developed at the Massachusetts Institute of Technology's Sloan School of Management. Referred to as the Design Structure Matrix, this is a method of process identification and refinement utilised in new product development by reputable organisations such as General Motors and Boeing. "The Design Structure Matrix differs from conventional project management tools in that it focuses on representing information flows rather than work flows. Thus, it is better able to depict the key dynamic of innovation processes" (Eppinger, 2001: 4). This is consistent with the key focus of the NetWorkPlace™ study's investigation of human interaction and associated socio-spatial arrangements.

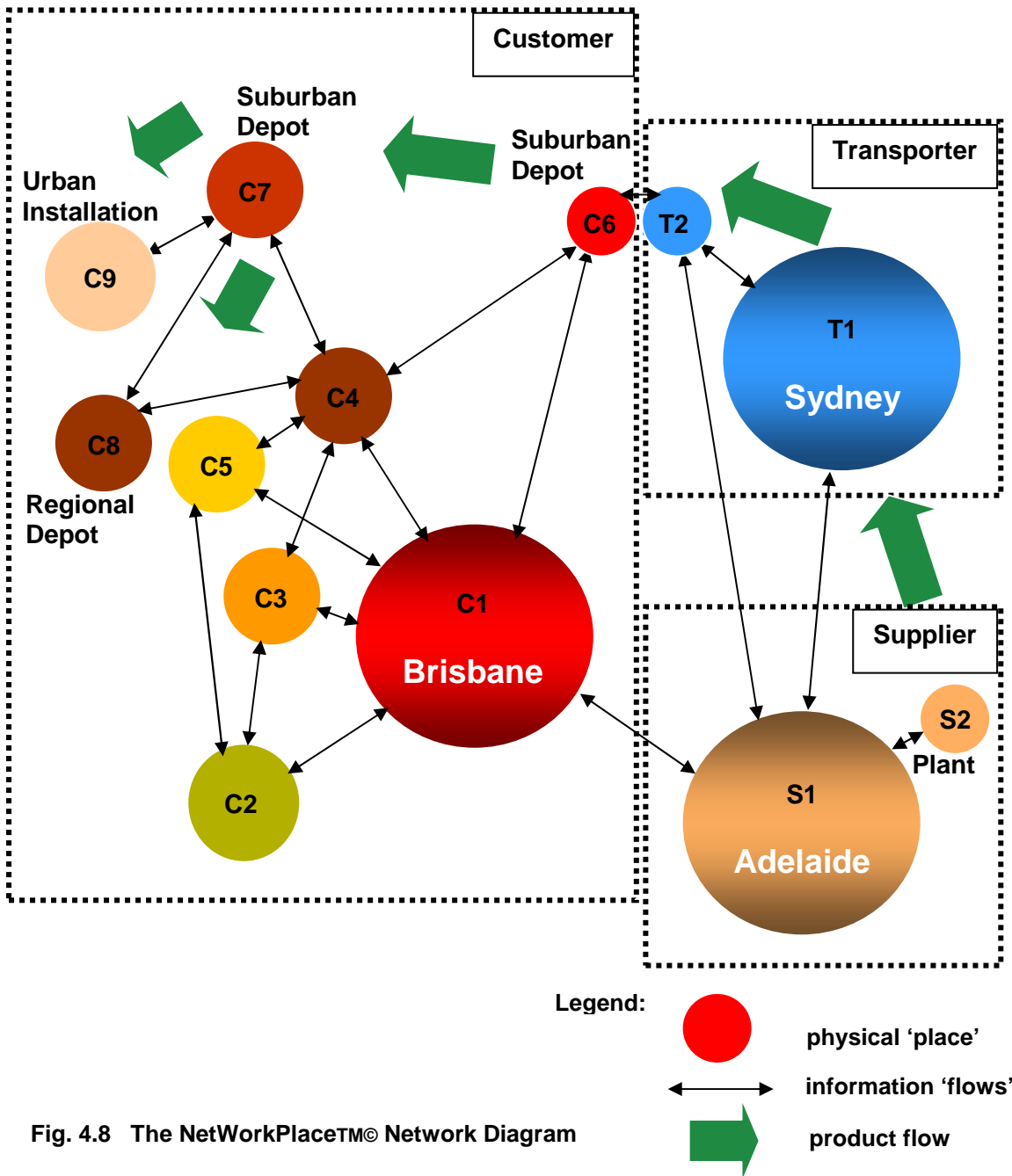


Fig. 4.8 The NetWorkPlace™ Network Diagram

The above NetWorkPlace™ Network Diagram (refer Fig. 4.8) graphically illustrates physical locations, together with human and process interconnections. Each of the organisations constituting the network enterprise are independently identified as the Customer, Supplier, and Transporter. Each of the physical locations have been assigned an identifying code number in order that the diagram can be read in conjunction with the Interaction Matrix shown overleaf. The NetWorkPlace™ Network Diagram together with the NetWorkPlace™ Interaction Matrix and Process Chart (refer Table 4.2) are complementary components of an essential tool of the investigative process.

**Table 4.2 The NetWorkPlacem<sup>TM</sup> Interaction Matrix and Process Chart**

Site Location Code	C1	C2	C3	C4	C5	C6	C7	C8	C9	S1	S2	T1	T2	Staff at Site
C1						17				8 30				9
C2	7				3									10
C3	6			1										5
C4	28		5		2	21	23 24							7
C5	4													10
C6	19												20	4
C7								25	26					15
C8				22 27										4
C9		25												6
S1	16 29										9 13	10	15	10
S2										14				7
T1										11			12	5
T2						18								3

Tasks/Activities defined below indicate information flows between members in matrix above:

Task	Activity
Plan, Monitor, Control.	
1	C3 advises C4 of programmed project requirements.
2	C4 advises C5 of project requirements and future projections.
3	C2 provides approval to C5 for future projections.
4	C5 advises C1 of overall planning projections.
5	C4 provides approval to C3 for special project priorities.
6	C3 advises C1 of overall project priorities.
7	C2 approves and monitors C1 expenditure.
Order, Make, Deliver.	
8	C1 places orders with S1 for phased product manufacture and delivery.
9	S1 liaises with S2 for manufacturing and distribution.
10	S1 requests transport services from T1.
11	T1 advises S1 of scheduled and special transport services.
12	T1 advises T2 of planned schedules and specific movements.
13	S1 advises S2 of distribution schedule.
14	S2 advises S1 of departures.
15	S1 advises T2 of despatch schedule.
16	S1 advises C1 of despatch schedule.
17	C1 advises C6 of arrival schedule.
18	T2 advises C6 of product arrivals.
19	C6 advises C1 of product deliveries received.
20	C6 advises T2 to retrieve transport vehicles after off-loading.
21	C4 advises C6 of transhipments required to C7.
22	C8 advises C4 of phased product quantity and delivery requirements.
23	C4 advises C7 of prefabrication requirements.
24	C4 advises C7 of distribution schedules to C8 and C9.
25	C7 advises C8 of products despatched.
26	C7 advises C9 of products despatched.
27	C8 advises C4 of product arrivals and installations.
28	C4 advises C1 of overall product handlings.
Payment.	
29	S1 issues invoices to C1.
30	C1 authorises and issues payments to S1.

The Process Chart indicates the task undertaken at each physical location. These are then transposed onto the Interaction Matrix through an identifying task number (e.g. **18**) to provide an overview of the network’s interactional activities. Numbers of staff accommodated at each site are also noted on the matrix to give a preliminary indication of the potential spatial implications.

The basic tasks and activities listed in the matrix and process chart are for network overview purposes only. A second order of detail is compiled in association for each task number (refer example below) prior to any traditional architectural design briefing information being sought. In this way the NetWorkPlace™ Network Diagram and the NetWorkPlace™ Interaction Matrix and Process Chart provide a much greater understanding of the context being investigated and the design implications involved. Similarly, spatial and traditional design briefing details can be accessed by ‘drilling down’ into the linked cells which depict the staff numbers at each site on the primary (overall) matrix compilation.

**Example of second order task/activity detail:** (linked to data shown in Table 4.2)

<b>18</b>	<p><b>T2 advises C6 of product arrivals.</b></p> <p>This activity involves three staff members from [T] and four staff members from [C] who are located at adjacent but separately controlled workplace sites at one of the chain’s transitional depots. The higher level organisational protocols deem that no contact is necessary between the operational staff at these sites and thus no formal processes have been implemented to facilitate the transfer of information. In order for the ‘system’ to operate effectively and efficiently however, T2 staff physically visit the C6 site every morning and a face-to-face informal information exchange session is undertaken “<i>between mates</i>” to ensure both parties are kept up to date with “<i>what is going on</i>”.</p> <p>Staff at T2 are housed in a relatively contemporary cavity brick building with modern amenities and direct computer access to the organisational headquarters. All information transfers and access to necessary databases are facilitated by connection to the corporate IT network. Staff at C6 are housed in a permanently positioned demountable hut with ‘used’ furniture and no computer facilities. All communication with staff in head office is undertaken by means of the telephone, facsimile machine, or by physically travelling to the main corporate headquarters building. The clear and present message is provided in the symbolism of the contrasting environments. Despite the fact that the activities undertaken at C6 are acknowledged by management to be one of the most critical links in the supply chain, operational staff accommodated there are at the bottom of the pecking order in the hierarchy and have been ‘put in their place’ and kept there both physically and metaphorically.</p>
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A series of ‘linked’ diagrams and cells (not shown herein) containing greater levels of required detail revealed through the investigation thus enhance the information available to both the researcher and the designer in practice.

## **4.9.0 The Methods of Investigation**

The objective of this research has been to explain the ways that the members of the network come to understand, account for, take action, and otherwise manage their interactions with each other, with technology, and with their physical environment. The main focus is to provide an interpretivist account which seeks to make sense of the group's actions and interactions. The following discussion indicates how, in order to "understand the relationship between the physical environment and people, a review of how everyday practice is located within the broader social context" (Smith, 2000: 72) has been operationalised through the NetWorkPlace™ study investigation. A basic tenet underlying the approach taken relies on a belief that "humans create the world of experience we live in, and act on things in terms of meanings things have for them" (Smith, 2000: 57).

Within the umbrella of the SCOP framework, project protocols were established and agreed to by the research team as a collaborative effort. The pro-formas utilised throughout the SCOP project were prepared as part of the NetWorkPlace™ study. These were endorsed and re-branded by the host project organisation for use by all disciplines throughout the duration of the research. The project manager ensured compliance with overall project protocols and the coordination of individual research efforts. Although each research stream focused on their own field of interest, regular group reflection sessions were undertaken at least every fortnight to support the trans-disciplinary nature of the project. All researchers contributed to a team based process which benefited from the various disciplinary insights and perspectives. Lessons from the process which may inform future research collaborations are presented in Chapter 8 of this thesis.

### **4.9.1 Data Collection Procedures**

#### **(1) Semi-structured, Open-ended Interviews (face-to-face).**

Individual interviews constituted the principal source of data collection and although undertaken within a structured format for consistency across the range of participants, were comprised predominantly of semi-structured, open-ended questions. This was designed to stimulate discussion, to elicit the subjects' own stories and interpretations of their meaning making talk and activities, consistent with the ethnomethodological approach adopted. All interviews were audio taped

and later transcribed for detailed analysis. No relevant industry or discipline 'standard' instruments were found to exist and thus none were utilised in this particular case although the processes followed well established qualitative research methods. Interview topics and questions were customised for the case at hand and specifically formulated to focus on the disciplinary areas under investigation and to target the participant categories as determined by their role in the supply chain.

Two separate 'Interview Kits' were prepared to guide the interview sessions and although they covered similar topics, were tailored to suit respondents' areas of responsibility depending upon whether they were from either the operational or the management categories. Individual questions were formulated by the various disciplinary researchers, based on their independent studies or literature reviews, and combined to form a holistic investigation into the relevant aspects of the supply chain. This process was a collaborative effort between researchers to ensure that each of the disciplinary objectives were addressed and that the interview progressed as a seamless and logical line of inquiry.

#### **Compilation of the Interview Kits:**

The 'Interview Kits', intended for guidance during the interview sessions, were prepared in a collaborative manner following clarification and consensus regarding the overall project and the individual research objectives. The kits were designed to provide a consistent structure over the full range of interviews, albeit that the sessions were conducted in a semi-structured, open-ended, discussion style format. In broad terms, the content of the interviews sought to elicit detailed information relating to:

- Individual roles in the supply chain
- Hierarchical organisational structures
- Contractual arrangements throughout the supply chain
- Operational and social relationships
- Information communicated across the network
- Technology utilised
- Physical environment and geographic relationships
- Sense of place and belonging
- Participation and empowerment
- Functional autonomy
- Sense of achievement attained
- Feedback received
- Opportunity to learn and transfer knowledge
- Conflict resolution methods
- Generally what worked well overall
- Generally what was required to be changed or improved.

A summarised version of the 'Interview Kits' (containing all of the formulated guiding questions) are included as an appendix to this thesis (refer Appendix 4.1). As much as possible, the interviews were directed towards understanding the perceptions of what, when, who, why, where, how, and how often in relation to each of the functional and content areas. The responses provided a vast amount of detailed information relating to the components later categorised under the broad headings of Operations, Information and Technology, Network Relations, Governance, Infrastructure, and Social Climate.

Both the SCOP project and the individual disciplinary studies' objectives were addressed without major compromise to either through the seamless interview process. Questions were designed to incorporate the needs of each of the research streams within the STIION framework and were guided by the NetWorkPlace™ Trans-Disciplinary Investigative Model (refer Fig. 4.6). Participant responses informed each of the disciplinary researchers in various ways and provided for a rich cross-fertilisation during the investigation and analysis phases with a consequent deeper understanding of issues provided by the different perspectives.

## **(2) Non-Participant Observations**

Observation sessions were undertaken at all of the workplace locations where interviews took place in order to enhance the understanding of subjects' normal day-to-day work activities and to further clarify the data obtained through the interview process. These were intended to be non-intrusive upon the research subjects' duties and it is considered that researcher presence had minimal impact. This was due to the nature of the research and the fact that the NetWorkPlace™ study was integrated into a wider organisational initiative which had both management and employee support from the outset. It should be noted that the observations undertaken often inspired the asking of additional questions relating to aspects that emerged 'on site' which were either not considered or not anticipated in the lead-up and preparatory stages of the investigation.

## **(3) Documentary Evidence**

Relevant organisational documents were examined in order to contextualise and compare the information revealed throughout the interview process. The documentary evidence collected enabled the following to be investigated:

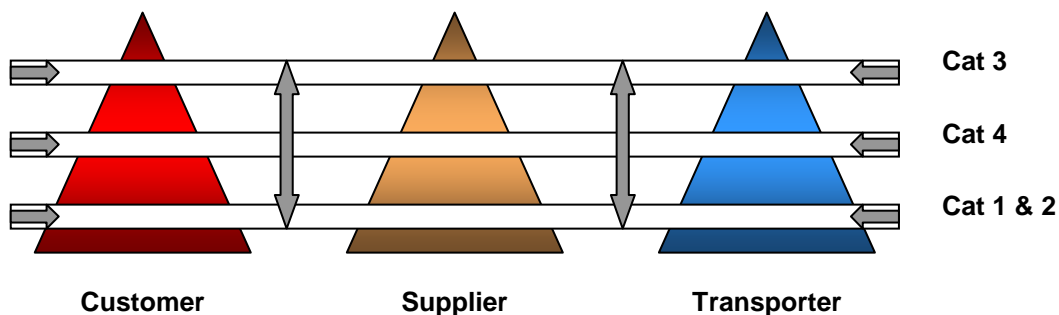
- ❑ The corporate/company profiles and the public images presented by each of the three network partners.
- ❑ The office/workplace policies of each organisation.
- ❑ The existing physical sites, facilities, and workplace layouts (where recorded plans existed).
- ❑ Various commercial arrangements of the inter- and intra-organisational relationships embedded in or impacting upon the network.

#### 4.9.2 Participant Involvement

The NetWorkPlace™ study aimed to identify and understand both the structural and social factors impacting on interaction within the supply chain and encompassed both inter- and intra-organisational contexts. This involved conducting stratified interviews with a range of stakeholders identified as being ‘key’ members of the network and as belonging to the following categories, differentiated by both hierarchical position and specific roles:

- Category 1 Those operational members directly involved in the ‘day-to-day’ functioning of the supply chain.
- Category 2 Those members directly involved in the ‘day-to-day’ functioning but who act as supervisors or support staff to other operational members.
- Category 3 Those members in senior management roles who make strategic decisions in regard to the supply chain operations.
- Category 4 Those members not directly involved in the ‘day-to-day’ operations but who provide specialist advice on aspects of the supply chain.

Interviews were thus conducted within the hierarchical structures of the individual organisations, and across organisational boundaries, depending on the interactional nature of the network strata being investigated (refer Fig. 4.9).



Note: arrows denote both horizontal and vertical interaction.

Fig. 4.9 Stratified Interviews



A total of thirty two (32) participants were interviewed initially in the context of their official employment capacity and asked to supply content information relative to their particular area of expertise and subjective information such as personal perceptions and attitudes relevant to the networks within which they operated. All interviews were face-to-face and consisted of semi-structured questions designed to stimulate discussion relating to work tasks, workplace interactions, and the workplace structure and infrastructure, together with a minimum of structured questions requiring succinct, specific answers. Interview discussions were audio-taped with participant consent and transcribed for later analysis.

Each interview was of approximately one to one and a half hours duration and undertaken with two researchers present on each occasion. The risk of interviewer bias was mediated by having one 'common' interviewer present at all interviews, with a reflective session held immediately after each to ensure consistency across the process. Non-participant observation sessions of normal day-to-day workplace activities were undertaken at each of the workplace sites in order to contextualise and clarify aspects of the interview data collected.

Operationalisation of the study complied with the relevant academic guidelines and what is generally regarded as normal standard practice in relation to qualitative research involving humans in accordance with the *National Statement on Ethical Conduct in Research Involving Humans* (NHMRC, 1999). Documents either provided to participants, utilised in the interview process, or as part of the project protocol included the following:

- ❑ A preliminary Information Sheet. (refer Appendix 4.3)
- ❑ A Consent to Participate Form. (refer Appendix 4.4)
- ❑ A Confidentiality Agreement (to which all researchers involved with the SCOP project were signatories). (refer Appendix 4.5)
- ❑ Individual Interview Kits utilised by interviewers for the various categories of participants. (refer Appendix 4.1)

### **4.9.3 Demographic Information**

Limited demographic data was sought as it was not considered that imposing such a request on participants would significantly add to the effectiveness of the study outcomes. The information provided below (refer Table 4.3) is given to enable some impression to be formed of the nature of the network, to allow consideration to be

made for any perceived bias, and for comparative purposes by any similar future studies which may be undertaken. The data provided includes information pertaining to respondents from both the Network Dimension and the Local Dimension components of the NetWorkPlace™ study. Non-participant observation sessions were undertaken on two additional occasions involving sixteen (16) and ten (10) persons respectively. These were both one-off occasions and no demographic data was collected. No quantitative inferences are either suggested or drawn from the population represented in this research.

**Table 4.3 Demographic Data**

<b>Network Dimension of the NetWorkPlace™ study.</b>		
Thirty two (32) participants constituted the final subject pool for Phase 1 of the study, all of which were interviewed at least once on an individual basis.		
<b>Number of Members Interviewed.</b>		
[C]	[S]	[T]
21	9	2
<b>Education Level.</b>		
Tertiary	Secondary	Primary
18	13	1
<b>Length of Experience in Network (in years).</b>		
<5	>5	>20
6	10	16
<b>Local Dimension of the NetWorkPlace™ study (the PID investigation).</b>		
Four (4) participants comprised the Focus Group interview session and an additional two (2) members from the management category were observed and recorded during a one-on-one meeting, all for the purpose of undertaking Conversation Analysis.		
<b>Focus Group: Number of Members Interviewed.</b>		
4 from [C]		
<b>Education Level.</b>		
Tertiary	Secondary	Primary
4	nil	nil
<b>Length of Experience in Network (in years).</b>		
<5	>5	>20
1	2	1
<b>Meeting: Number of Members Observed.</b>		
2 from [C]		
<b>Education Level.</b>		
Tertiary	Secondary	Primary
2	nil	nil
<b>Length of Experience in Network (in years).</b>		
<5	>5	>20
nil	2	Nil
<b>Overview of Members with direct participation in both dimensions of the study.</b>		
Male	Female	Total
33	5	38

#### **4.9.4 Details of Subject Pool**

The interview subjects were drawn from key respondent areas identified as being critical components of the supply chain information flows to be investigated. These were identified in the first instance through consultation with management levels of the host organisation, and later in much greater detail through consultation with key operational personnel. Distribution of a 'Project Information Sheet' and 'Expressions of Interest' to participate were called so that a representative sample could be achieved for the research task across each of the required areas and to further ensure that the process reflected the participative design philosophy underpinning this project. No screening of the subject pool was undertaken beyond ensuring that each component in the network was represented. All subjects were employees of either [C], [S], or [T] at the time of the study. A common data set of interview transcripts was collected and analysed by each of the individual disciplinary researchers who whilst undertaking their own specific disciplinary research in parallel, contributed to the overall SCOP project.

#### **4.10.0 Validation and Verification**

Throughout the data collection and initial analyses outlined in the processes associated with the NetWorkPlace™ 'Network Dimension' and 'Local Dimension' (refer Chapter 5 and Chapter 6), issues and themes began to emerge. These took the form of certain regularities and patterns, the identification of core concerns, together with the differentiation of opinion between interviewees depending on their relative positions in the network and within their own organisational hierarchies. No conclusions were drawn at this stage however, but the realisations prompted particular avenues of investigation to be more deeply probed and for new propositions to be explored. An interweaving of preliminary analysis into the data collection stage also helped to ensure that any gaps existing in the original conceptualisation of the research design could be compensated for by adjusting or extending field procedures. This also helped to maintain a focus within the core investigation as the dynamic process provided early indications in regard to what was emerging from the process, rather than waiting till all the data was collected in the hope that 'something meaningful' was contained within the mass of words which had accumulated.

Not until the data reduction possibilities had been exhausted and extensive discussions and iterations completed, was there any attempt to formulate a list of findings, although tentative insights isolated throughout the analysis process, strongly influenced the ultimate outcome of the study. All of the conclusions drawn from the study are 'grounded', as Glaser and Strauss (1967) would describe, in the data collected. Verification of interpretations was an on-going process, achieved by either continually re-checking the raw data, or by contacting the original interviewees for clarification of ambiguities. Lengthy discussions amongst the group of researchers involved in the host project and peer reviews within the team for consideration of individual interpretations, enabled a process of inter-subjective consensus to be implemented in order that a high degree of confidence could be placed on the robustness, confirmability, and plausibility of the conclusions reached.

In reality, the processes of data reduction, data display, and conclusion drawing associated with the analyses could not be represented as a single continuum, but more correctly formed a set of interwoven, abductively driven activities. It is considered that the robust process of analysis undertaken, together with the triangulation of methods and data sources utilised, contributes substantially to the validity and reliability of the research overall.

#### **4.11.0 Complementary Components**

As outlined throughout this chapter, the two components of the NetWorkPlace™ study have been denoted as the 'Network Dimension' and the 'Local Dimension'. The mode of investigation and analysis for each is distinct but complementary in terms of ontological foundation and epistemological orientation.

It is necessary therefore to document each of these separately and a comprehensive report on each follows in Chapter 5 and Chapter 6. The learnings or meta-inferences from each dimension (refer Fig. 3.3) are then blended into a cohesive discussion in Chapter 7. This serves to provide understandings of the complexity of the network and a comprehensive explanation of the task confronting the design professions operating in what has been described as the context of the knowledge economy and the network society.

Chapter 1 INTRODUCTION

Chapter 2 LITERATURE REVIEW

Chapter 3 METHODOLOGY

Chapter 4 CASE STUDY

**Chapter 5 THE NetWorkPlace™ ANALYSIS:  
'Network Dimension'.**

Chapter 6 ANALYSIS – Local Dimension

Chapter 7 DISCUSSION

Chapter 8 CONCLUSION

## **Chapter 5      THE NetWorkPlace™ ANALYSIS: ‘Network Dimension’.**

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### **5.1.0      Introduction – The ‘Overall Network’**

The ‘Network Dimension’ analysis involved a cross-sectional, trans-disciplinary investigation of the overall network of three cooperating organisations, in collaboration with and as an integral part of a host project (SCOP) examining innovation in a supply chain context. Due to the trans-disciplinary nature it is by necessity that much of the analysis and discussion is interwoven however distinction is provided between the activities of the NetWorkPlace™ study and the SCOP project where relevant. The primary aim of this aspect of the NetWorkPlace™ study was to isolate and understand the factors impacting on workplace design from a total network perspective.

The process adopted draws on traditional methods of qualitative research, it is however unique in its application and therefore warrants comprehensive documentation. It is considered that architects have yet to fully explore and define their own ways of approaching the research process which mirrors the level of creativity displayed in their approaches to the design and construction of the built environment. Through the documentation and distribution of cases such as the NetWorkPlace™ study, which attempt to understand and describe the actions and reactions of people in relation to conceptions of place and space in actual contemporary situations, and in collaboration with disciplines beyond our own professional boundaries, progress can be made in contributing to knowledge.

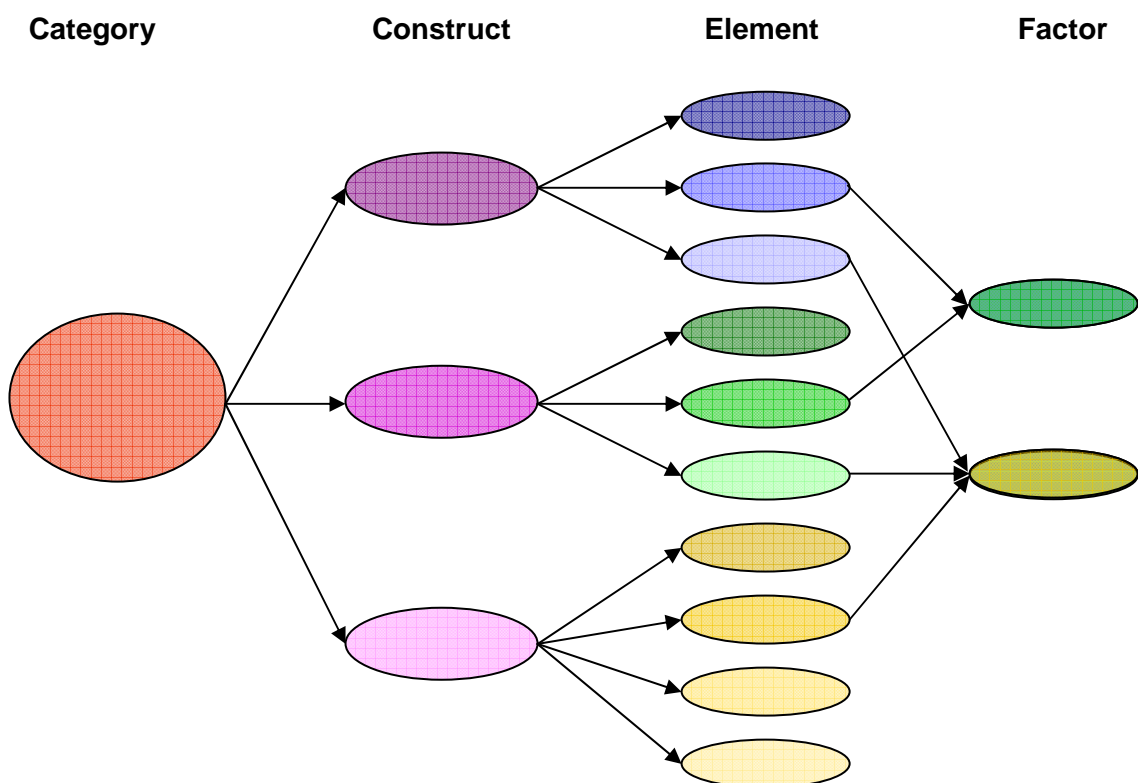
### **5.2.0      Data Reduction**

The data reduction undertaken for this aspect of the study encompasses a process of selecting, simplifying, abstracting, and transforming the data that appears in its raw form as interview transcriptions and written field-notes. Data reduction was not separate to analysis however, but an iterative process of on-going categorisation and the focusing of emergent issues.

Due to the nature of the interviews undertaken for the NetWorkPlace™ study, that is: open-ended discussion covering a number of discrete disciplinary interests; a

proportion of the information obtained initially appeared to not be directly relevant to the core topic of physical workplace design under investigation. However, on-going analysis, refinement, and iterations in conjunction with the various disciplines enabled many linkages to be established between related issues as similar themes began to emerge from the data collected throughout the network. It was necessary in such a trans-disciplinary research approach to allow interviewees the scope to express their views, beliefs, and opinions on all of the aspects contained in the aggregated collection of (SCOP) questions, in their own terms. The aim of the interview sessions was to keep the conversations on-track whilst ensuring that the topics were fully explored.

In order to make the process undertaken at this stage more comprehensible, the following figure entitled 'Coding Abstraction Diagram' (refer Fig. 5.1) indicates the progressive categorisation procedure. It also shows how linkages were established in the ultimate formulation of the final network 'factors' which provided the basis for later explanation and discussion.



**Fig. 5.1 Coding 'Abstraction' Diagram**

The data reduction phase is often referred to as data condensation (Tesch, 1990), a condensing of the material into a manageable, relevant form. Data reduction in this case underwent a number of iterations, partly because of the necessity to gradually deconstruct the information, re-code certain parts as greater understanding emerged in order to be able to reassemble it in 'meaningful' terms, and partly due to the involvement of various researchers who were engaged in a continuous trans-disciplinary learning process.

The on-going sorting, discarding, organising, and sharpening of the focus during data reduction, the simplified methods of data display used, and the making of the overall development explicit, enabled final conclusions to be drawn and 'verified' in context. This occurred through both the individual and also the iterative group processes undertaken in conjunction with other researchers involved in the SCOP project (refer Fig. 4.7).

### **5.2.1 The Interview Data**

All interviews were of between 1 and 2 hours duration, depending on the amount of information being offered and the perceived ability and willingness of the participant (respondent) to engage in conversation. Each interview was undertaken at the 'home' worksite of the particular participant and was done in this manner in order to minimise the level of discomfort which might be felt by participants, and to negate as much as possible any assumed power differential which might be attributed to interviewers by interviewees in the circumstances. This was achieved by asking for permission to conduct the interview at 'their' office or work site, and by ensuring that the purpose and aims of the study were clearly communicated through the issuing of an 'Information for Participants' sheet (refer Appendix 4.3) prior to any actual physical involvement. The comments and body language displayed commitment to the process by all of the participants who indicated that they did not consider the interview was in any way intrusive. This observation was strengthened by the fact that each participant's involvement was on a voluntary basis and that in all cases, they stated that being asked to provide their opinion was a positive step towards achieving any possible improvements to the system and/or their individual circumstances. An additional benefit of this approach to the interview process was that each workplace site comprising the study setting was able to be observed unobtrusively and at first hand.



Tape recordings of all 32 interviews were made with the permission of participants who had each signed a voluntary Consent Form (refer Appendix 4.4). The recordings were then transcribed resulting in 372 pages of verbatim interview text. The transcripts were prepared initially as a sequential arrangement of the trans-disciplinary interview sessions. These were structured in accordance with the ordering of the interview questions, based on the presentation of an integrated approach to the various disciplinary perspectives being investigated. A re-ordering of the data was then undertaken where necessary to enable the information specific to different disciplinary foci to be revealed and segregated. Words thus became the primary focus for the extended 'content' analysis.

It became apparent however throughout the process that such relevant information was not necessarily neatly confined to the questions prepared individually by each discipline. Data reduction then in such a trans-disciplinary undertaking is of paramount importance to begin to produce clarity. Thus at the outset of the analysis process, each researcher who contributed to the SCOP project fully examined all of the transcript material based on their own particular perspective, prior to any group discussions being held in relation to findings or emerging themes.

### **5.3.0 Coding the Interview Data**

Coding, in relation to the NetWorkPlace™ study, is the general term given to the process of differentiating and combining sections of text from the interview transcripts in order for choices to be made about the significance of the words, phrases, sentences, or whole paragraphs in their given context. These codes are perhaps more simply described as labels for "assigning units of meaning to the descriptive or inferential information compiled during [the] study" (Miles & Huberman, 1994: 56). So as not to be confused with the formal term 'coding' as it is applied in other forms of qualitative analysis such as grounded theory, in this case it is used generally to describe the data distillation process at the network dimension.

The method of coding adopted for the NetWorkPlace™ study analysis, as previously stated in Chapter 3, was based on methodology used by the American Institute for Social and Community Planning Research (SCPR). The purpose of utilising a trusted methodology as the basis for coding in this case was to ensure as much as possible that, as Ritchie and Spencer (2002: 308) suggested, "the qualitative researcher has to provide some coherence and structure to this

cumbersome data set while retaining a hold of the original accounts and observations from which it is derived.” They further advocated that qualitative data analysis is essentially about detection, and the tasks of defining, categorising, theorising, exploring, and mapping are fundamental to the analyst’s role.

The coding process did not commence until after all of the interview data had been collected and transcribed. It was then thoroughly examined manually and independently by each of the disciplinary researchers involved in the SCOP project. This method might best be described as an inductive coding technique (Strauss & Corbin, 1998). Although some issues and patterns were identified as emerging themes during the data collection stage, the objective in adopting the approach described, was to not make any pre-emptive decisions about how the total data set might be treated until after all interviews were completed. Miles and Huberman (1994: 61) described this as waiting to see “the way the data appears empirically”, that is, stepping back and observing how the data sits within the context of the total project.

The iterative process of individual coding followed by group discussion, sharing, reflection, and consensus, was designed to instill a robust quality into the analysis process. It also ensured that the operational definitions once established, could be applied as consistently as possible by multiple researchers who in effect were analysing the same phenomenon, albeit from diversely different perspectives. The benefit of this was that segments of the data, when analysed from different perspectives, were found to have the potential to enrich the analysis by providing ‘other’ illuminating explanations of like topics or similar concepts. Through this collaborative process, a method was established whereby the various labels assigned were able to be related in the gradual construction of a governing framework for the overall trans-disciplinary analysis. The cornerstone of this method was on-going dialogue between researchers and the explicit expression of consensus or disagreement. This enabled disciplines to learn from each other and integrate the knowledge into their own world views, reinforcing the philosophy of trans-disciplinarity.

The following diagram (refer Fig. 5.2) provides an overview of the phases involved in the Network Dimension analysis process. It identifies the roles and the sequences of the data sets used and the processes involved, together with the interim and ultimate outcomes achieved.

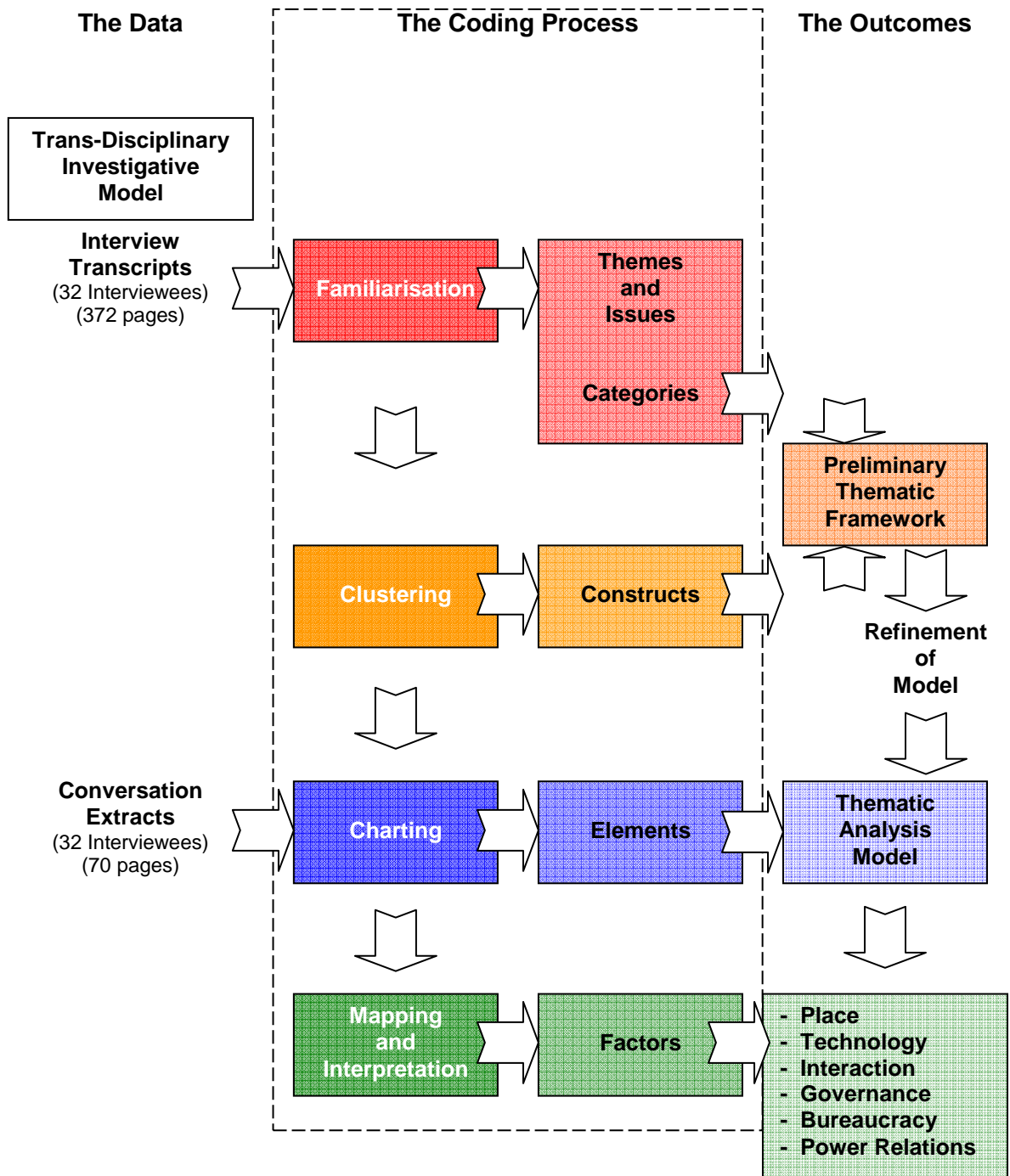


Fig. 5.2 The 'Network Dimension' Analysis Process

The process culminated in the identification and isolation of the 'factors' considered to have the most potential to inform the workplace design process from a network context perspective.

#### 5.4.0 Phase 1: Familiarisation

The focus at this stage centered on recurring themes and issues which were presented as important to and by the participants themselves. In order to gain a complete overview of the interview material gathered, each of the transcripts were read in full, specific selections of the recordings re-listened to, and the observation notes taken at the time of the interview in relation to the participants themselves and the general mood of the discussion, reviewed. This procedure provided a general feel for the case under investigation and enabled initial ideas to be formed about key issues and themes in the context of the full data collection. A general perception regarding the potential richness, depth, and diversity of information contained therein was able to be gained from this process.

Relative to the NetWorkPlace™ focus, the familiarisation process indicated that the following ten (10) aspects were of primary importance to the participants (refer Table 5.1). An additional nineteen (19) aspects were also identified through the trans-disciplinary SCOP collaboration for consideration (refer Table 5.2).

**Table 5.1 Initial Themes and Issues: NetWorkPlace™ Focus**

No	Themes	Issues
1.	formal policies	across the full range of respondents there was very little awareness of the existence of, and virtually no knowledge regarding the details of any formal policies in relation to workplace design.
2.	co-location	co-location and geographical isolation were portrayed as significant considerations in relation to the ability to interact with others in the network.
3.	physical design characteristics	actual physical design and characteristics of the workplace appear to be of great concern to some respondents and of little concern to others.
4.	interaction	interaction with colleagues across the network was clearly the most significant issue to be raised, with many desiring much more opportunity for face-to-face meeting.
5.	participation	participation in the workplace design process was conveyed as being important but did not appear to be evident in practice.
6.	place belonging connection	various levels of both a sense of place and a sense of belonging in the network were portrayed indirectly through discussions about feelings of connection or disconnection to both people and physical places.
7.	bureaucracy	an image of stifling bureaucracy was portrayed, with varying levels of empowerment and autonomy across the network and within individual hierarchies.
8.	security	security considerations appear to dominate access to sites and physical workplace layouts.
9.	hierarchical differences	the varying categories of respondents from managers to operational staff expressed similar views on a limited number of issues, but the majority of opinions expressed were vastly divergent.
10.	difficulty in articulating opinions	the majority of respondents, even those with apparently strong opinions on most issues, had difficulty articulating their views and feelings, and in some cases could not even engage in meaningful discussion about workplace design issues.

**Table 5.2 Initial Themes and Issues: Trans-Disciplinary Focus of SCOP**

No	Themes	Issues
1.	explicit knowledge	explicit information and knowledge appears to be a localised phenomenon with very little network wide documentation available.
2.	implicit (tacit) knowledge	implicit information or tacit knowledge held by a variety of people in the chain appears to be the biggest factor in the functioning of operations across the network.
3.	decision support systems	formal decision support systems are not being used in any obvious or consistent manner across the network.
4.	learning	there appears to be a strong preference by the majority of respondents to learn on the job rather than through formal training courses.
5.	risk	there appears to be a management culture of risk aversion with a propensity to maintain control whilst avoiding responsibility.
6.	compliance	each of the organisations appear to have rigid legal compliance regimes operating as a way of managing risk.
7.	policies	most respondents expressed frustration at the large number of organisational policies they were required to address.
8.	stakeholder focus	there was a perceived difference between organisations in regard to stakeholder focus, ranging from attempts to increase shareholder wealth to an obsession to satisfy Government Ministerial demands.
9.	governance	the legal structures of the different partner organisations appears to result in significantly different governance arrangements.
10.	records management	sharing of records and information across the network and within organisations was tightly controlled and fiercely protected with no obvious behaviours or protocols to encourage inter-organisational cooperation.
11.	technology	technology is not being utilised in the manner intended by the organisations given their massive financial investments in equipment and training, particularly in the area of information systems.
12.	network relations	based on formal arrangements between the various centralised organisational bureaucracies.
13.	social ties	allowing the various players to come together, even temporarily or periodically, was generally agreed as being potentially beneficial to the network operations and strengthening of social ties, but there were very few ideas on how this could be achieved.
14.	trust	all across the network, respondents reported the high level of confidence they placed in specific trustworthy people with whom they were familiar in order to get their own work done. The level of distrust between operational and management levels was high.
15.	power and hierarchy	power relationships between the organisations in terms of which one controlled the network were generally considered to not favour any one firm above the others. The imbalanced power dynamics within the traditional hierarchical structures of the individual organisations was overwhelmingly expressed as an issue of concern.
16.	cooperation	levels of cooperation across the network at the organisational levels appears to be influenced by the structural conditions of formality, centrality, intensity, and density, whilst at the personal level is influenced by familiarity and past experience in dealing with particular people, or their known reputation.
17.	collaboration	collaboration was generally acknowledged as being an essential ingredient in order for the network to function.
18.	interaction	interactions across the network were reported to be frequent and egalitarian in nature, whereas this does not appear to be the case for vertical interaction and participation.
19.	co-location	physical co-location was considered to be desirable for a number of reasons, but impractical given the nature, extent, and spread of the network.

Each researcher involved in the SCOP project undertook a process of familiarisation concurrently, but independently. This was followed by a collaborative evaluation of which components of the study had identified ‘common ground’ and where the major ‘differences’ lay in order to plot a course forward. There was a strong sense between the SCOP team that many, if not all of the issues revealed at the initial stage were somehow inter-related. It was concluded that these themes and issues could be grouped within a number of discretely ‘defined categories’ in order to reduce the complexity and these are indicated below (refer Table 5.3).

**Table 5.3     ‘Defined Categories’**

<b>NetWorkPlace™ Focus</b>	<b>SCOP Focus</b>
Infrastructure	Operations
Social Climate	Governance
	Infrastructure
	Formal Network Relations
	Social Climate

The implications for and possible relationships with the NetWorkPlace™ study of the insights revealed by the other disciplines are explored throughout the following stages of analysis and discussion. It was jointly agreed between the SCOP research team that there was a need to establish an over-arching thematic framework within which each of the disciplines could further sort and categorise the interview material identified as being important to their own research focus. The common framework maintained an awareness of the trans-disciplinary opportunities to gain additional insights which impacted upon individual interpretations. The foundation for this framework was established by revisiting the underlying research ontology, the overall SCOP research question (of ‘what are the major factors which impact on the supply chain’s ability to operate and innovate?’) and those of the independent disciplines, together with the aggregation of initial tentative findings revealed.

This implies that it was a natural and easy progression in the overall task, however it highlighted one of the first major difficulties faced by a team of divergent disciplinary researchers. The cooperation and collaboration experienced in the early stages of research problem and strategy formulation were driven by a level of enthusiasm considered most probably to have been influenced by the ‘novelty’ factor and the potential to be involved in a unique research environment.

Once the data had been collected and dispersed, there appeared to be a sudden altering, albeit slight, in the approach of some members of the team. This was most evident in the implication given by a couple of the researchers that they would now be able to 'go off and do their own thing and report their findings back at the end'. This was a direct contradiction to the trans-disciplinary approach originally agreed to by all, fitting more appropriately into the multi-disciplinary model discussed earlier (refer Chapter 3). The outcome was that the formulation of the over-arching thematic framework mentioned above enabled the team to take stock of its original intent and maintain a trans-disciplinary focus. This was achieved through an estimated joint 50/50 effort involving input by the NetWorkPlace™ study process and the host (SCOP) project. The NetWorkPlace™ component was responsible for initiating many of the overall SCOP research strategies and initiatives and maintained a leading role throughout the project.

### **5.5.0 Phase 2: Clustering**

The challenge became one of integrating the first stage of the data reduction process to maintain a holistic perspective in order that a truly trans-disciplinary outcome could result both for the host project and for the individual studies involved. This was achieved through a process of independent clustering followed by group discussion and iteration sessions to formulate a framework which truly catered to the independent perspectives, but in a manner which enabled the aggregation of the emerging insights and knowledge. It became apparent early in the process that the complexity of the context required simplification in the presentation of data if it was to remain 'alive' and in a format which could be understood and discussed by researchers from diverse backgrounds and experience. This led to a sense of both individual and group responsibility for the outcomes becoming a hallmark of the trans-disciplinary approach undertaken.

It was decided collaboratively that each researcher would independently review the initial themes and issues in order to identify what they considered to be the main 'constructs' to emerge from the interviews, based on their particular disciplinary perspective. From this collective, group discussions were held to identify overlaps and relationships on a broad scale. This provided the basis for the development of a thematic framework to be established within which the 'constructs' and their relationships could be assembled and displayed in a form which was understandable and representative of the emerging themes of the study.

The preliminary framework (refer Fig. 5.3) was achieved firstly by aligning the 'constructs' with the broader 'components' of the NetWorkPlace™ Trans-Disciplinary Investigative Model (refer Fig. 4.5), and the newly 'defined categories' established in the Phase 1 'Familiarisation' process. The categorisations used as the foundation for constructing the preliminary thematic framework relied heavily on apriori issues such as the original research aims and the investigative process adopted. These were confirmed as being appropriate and relevant through the emergent issues raised by the respondents themselves, and the analytical themes arising from the recurrence or patterning of particular views or experiences. "It involves making judgements about meaning, about the relevance and importance of issues, and about implicit connections between ideas ..... it also involves making sure that the original research questions are being fully addressed" (Miles & Huberman, 1994: 313-314).

The process of constructing the 'preliminary thematic analysis framework' enabled the data to begin to take on an immediately accessible, compact form so that each researcher could clearly isolate their own components of the study, but also be able to understand from an holistic perspective what the next step of analysis required might be. This proved to be a rather more inventive and iterative approach than had previously been experienced by any of the researchers involved and came not without some pain in regard to extending normal disciplinary boundaries. It required lengthy discussion and a willingness on the part of each of those involved to acknowledge 'other' points of view and to assess if and how this impacted on what could be described as their 'traditional' viewpoints.

A truly trans-disciplinary approach would not be possible without the presence of such an on-going interactive dynamic. The responsibility and obligation to the group process ensured that the needs of all were met at this time and set the tone for this to continue throughout the following phases of analysis. Although each researcher undertook the organisation of their own data through a range of matrices, graphs, tables, and network diagrams, the ultimate process which emerged from this activity is embedded in the Preliminary Thematic Analysis Framework (refer Fig. 5.3) and is considered to be a powerful representation of both the NetWorkPlace™ study and the overall SCOP project analysis rationale.

In essence, each of the disciplinary perspectives functioned as an independent study in their own right. The trans-disciplinary involvement was undertaken with the conscious understanding and stated objective that the researchers would make



every effort to learn from each other's insights and in this way the additional knowledge gained could contribute to the outcome of each discipline beyond that possible from a single perspective. The eventual realisation became a reinforcement of the old adage that 'the whole is greater than the sum of all of its parts'.

### 5.5.1 Development of the Thematic Analysis Framework

The following (refer Table 5.4) indicates the alignment between the components of the 'Investigative Model', the defined categories from the 'Familiarisation' process, and the identified constructs resulting from the 'Clustering' process.

**Table 5.4 'Category' – 'Construct' Alignment**

Components of apriori Investigative Model	Familiarisation: Defined Analysis 'Categories'	Indexing: Identified Analysis 'Constructs'
<b>NetWorkPlace™ Specific:</b>		
Workplace Environments	Infrastructure	Spatial Policies Location Spatial Characteristics
	Social Climate	Interaction Participation Connection
<b>Additional Trans-Disciplinary Application:</b>		
Inter/Intra-Organisational Processes	Operations	Explicit Knowledge Implicit Knowledge Decision Support Systems Learning
Corporate Governance	Governance	Risk Compliance Policies Stakeholders
Information and Technology	Infrastructure	Records Management Technology
Network Relations	Formal Relations	Formalisation Centrality Intensity Density
	Social Climate	Trust Power Cooperation Collaboration

Definitions applied to the 'categories' and 'constructs' listed above and which are specific to this case, are outlined following (refer Tables 5.5 and 5.6 respectively).

**Table 5.5 Definitions of ‘Categories’**

Note: NetWorkPlace™ specific ‘examples’ only are provided.  
 (A complete list of ‘category’ definitions are included as Table 5A.5 in Appendix 5.1)

‘Category’	Definition
<b>NetWorkPlace™ Specific:</b>	
Infrastructure	Physical objects, artefacts, and assets which a business acquires or leases in order to structure and undertake its operations such as buildings, computers, machinery, vehicles, etc.
Social Climate	The expression of the values, beliefs, norms, and practices of respondents which provide coherent ways for individuals and groups of people to act and behave within the network context.
<b>Trans-Disciplinary Application:</b> (refer Table 5A.5 in Appendix 5.1)	

**Table 5.6 Definitions of ‘Constructs’**

Note: NetWorkPlace™ specific ‘examples’ only are provided.  
 (A complete list of ‘construct definitions are included as Table 5A.6 in Appendix 5.2)

‘Construct’	Definition
<b>NetWorkPlace™ Specific:</b>	
Spatial Policies	Formal organisational policies or guidelines related to design, allocation, or use of physical space.
Location	The physical place or places where the member is situated when undertaking their role in the supply chain.
Spatial Characteristics	Characteristics relative to the creation and use of physical or virtual space at the workplace site or between workplace sites.
Interaction	Formal and informal communication and relationship building between members of the supply chain, including modes utilised for communication or to engage with technology and/or information systems.
Participation	Individual and group involvement in the process of designing the workplace, including the ability to influence or make decisions through autonomy, empowerment, or authority.
Connection	An individual's perceived connection to a physical place or membership of an identifiable group within the network. (This is discussed traditionally in terms of either sense of place, sense of community, or sense of belonging).
<b>Trans-Disciplinary Application:</b> (refer Table 5A.6 in Appendix 5.2)	

The Phase 1 (Familiarisation) and Phase 2 (Clustering) components of the ‘Network Dimension’ (refer Fig. 5.2) indicate the logic and sequence of steps in the initial part of the analysis process.

Phase 1 illustrates how the data ‘categories’ were established through the apriori Investigative Model (refer Fig. 4.5) and interpreted from issues which emerged in the ‘Familiarisation’ process.

The Phase 2 ‘Clustering’ process refined the initial issues identified into clearly defined ‘constructs’ leading to the establishment of the Preliminary Thematic Analysis Framework (refer Fig. 5.3).

## 5.5.2 The Logic of the Framework

Development of the Preliminary Thematic Analysis Framework was based on a combination of the study's objective–subjective ontology and the coding of the empirical data emerging from the investigation, underpinned by the concept of 'fit' adapted from a statistical approach to organisational strategy research (refer Appendix 5.3). The diagram following (refer Fig. 5.3) indicates that the framework consists of a juxtapositioning of both structural and social aspects identified through the investigation as being relevant to contributing to the creation of innovation in terms of the SCOP project. The importance of innovation to organisations in the context of collaborative partnerships and supply chain management was discussed and established previously (refer Chapter 2). An acceptance of the relationships within the network enterprise which facilitate the achievement of innovation underpins the objective of both the NetWorkPlace™ study and the over-arching SCOP project (refer Chapter 4).

It was resolved between the research team members to accept the NetWorkPlace™ position that the major analysis 'categories' could be separated, based on their objective-subjective characteristics. The objective characteristics were defined as those which constituted or described the given physical and organisational structure of the network enterprise context, whilst subjective characteristics were those related to how respondents dealt with or interpreted these structures.

This resulted in the 'categories' of corporate governance, operations, (formal) network relations, and infrastructure being deemed to be of an objective nature whilst social climate was determined as portraying the characteristics embedded in the subjective (or respondents' interpretational) aspects of the study.

Within the initial framework development, 'variables' were grouped in accordance with the 'categories' and 'constructs' identified through the Phase 2 data coding process. The 'structural' variables represent the constructs which constitute the 'objective' reality of the network context. Adjacent to these are the variables determined as belonging to the 'social climate' category and represent the study's 'subjective' dimension. Through subjective interpretation, study participants made-sense of the objective constructs in order to create their version of social order within the world of the network enterprise.

It is important at this point to highlight the sometimes nebulous concept of innovation to illustrate the relevance of situating the NetWorkPlace™ study within the broader SCOP project in order to establish that workplace design is considered as one of the mechanisms that enables or enhances organisational processes. The drive towards achieving innovation was an apriori objective of the SCOP project and this represents a criterion variable bounding the NetWorkPlace™ study. The term variables, incorporating concepts more commonly used in and identified with the positivist tradition have been adapted to underpin the logic of the Preliminary Thematic Analysis Framework construction (refer Fig. 5.3).

Antecedent variables encompass the objective organisational constructs identified whilst the intervening variables represent the range of issues related to subjective interpretation. The consequent variable represents the SCOP project objective and thus is the bounding variable in this case, leading to future practical implementation and further research possibilities.

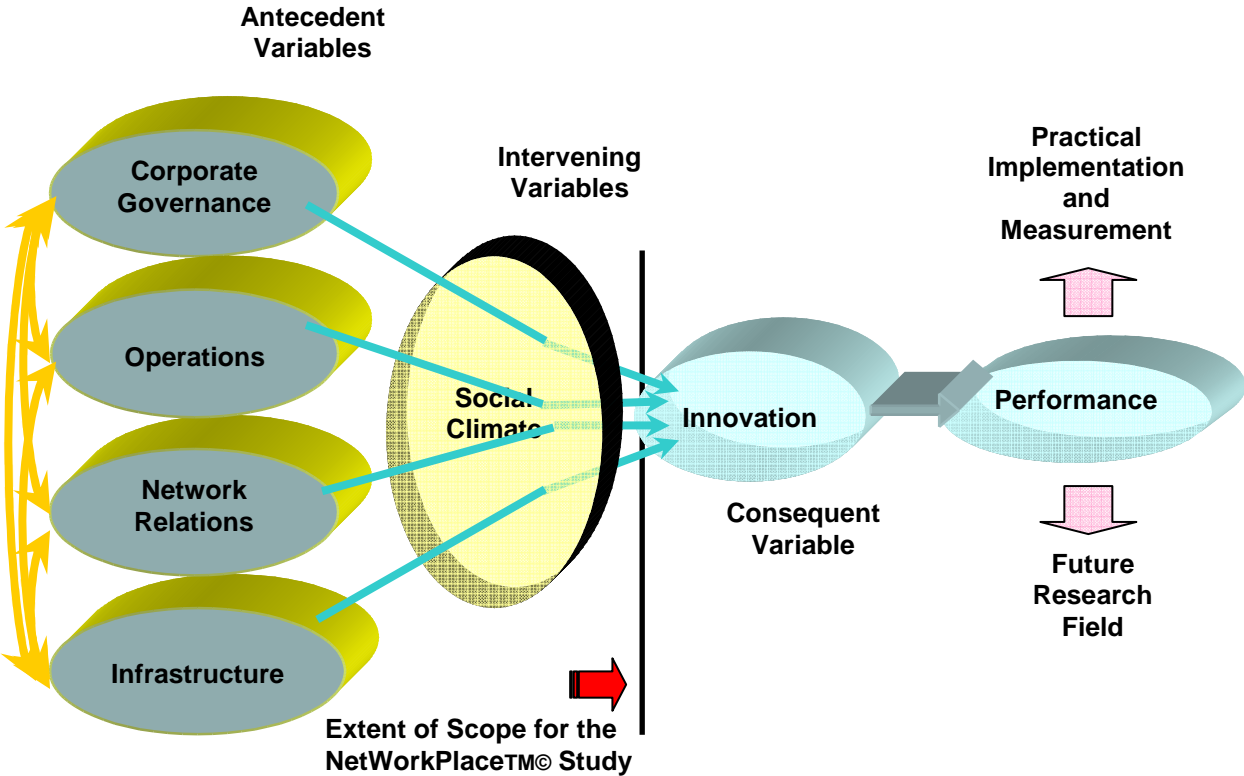


Fig. 5.3 Preliminary Thematic Analysis Framework

Borrowing concepts from an alternative paradigm which were relevant to the nature of the research in this instance provided a way of positioning this study to be discussed in terms of previous organisational research efforts and ensures consistency for any potential extensions to this study in the future. The concept of 'fit' between organisational variables is certainly not new but has been used extensively as an important component of theory construction in the past (Aldrich, 1979; Thompson, 1967), particularly in relation to strategic management (Miles & Snow, 1978) from which supply chain management has adopted many of its grounding principles (McAdam & Brown, 2001).

As supply chain management is not yet embedded within any universally acknowledged theories (Burgess, 2003; Burgess & Singh, 2004), it seems appropriate at this point to defer to theories which have emerged from the strategic management discipline over time as a means of providing increased legitimacy to the approach adopted. Accordingly, the notion of 'innovation as a bounding criterion' and the concept of 'fit between organisational variables' have been adopted as appropriate theoretical justifications in the development of the Preliminary Thematic Analysis Framework and the models which followed throughout the NetWorkPlace™ study processes.

It is adequate herein that such assumptions have been stated, however a full explanation of the logic and the associated rationale in relation to use of the term 'variables' and the concept of 'fit' are provided in the appendices to this thesis (refer Appendix 5.3).

### **5.5.3 Consolidation of the Thematic Framework**

The Preliminary Thematic Analysis Framework, for clarity, presents only the 'categories' and their relative relationships. The lack of fine analytical detail enables an overview of the case data to be easily comprehended, and provides the basis for the later, more interpretive stages of analysis to be revealed through the 'constructs' and 'elements' which constitute the deeper levels of data sub-categories. The 'category' – 'construct' groupings shown following (refer Table 5.7) highlight the positioning of the NetWorkPlace™ study focus within the overall framework.

**Table 5.7 ‘Categories’ and ‘Constructs’ of Trans-Disciplinary Research  
(Focus of NetWorkPlace™ study are shown bolded)**

‘Categories’	‘Constructs’
Governance	Risk Compliance Policies Stakeholders
Operations	Explicit Knowledge Implicit Knowledge Decision Support Systems Learning
Network Relations (formal)	Formalisation Centrality Intensity Density
<b>Infrastructure</b>	Records Management Technology <b>Spatial Policies</b> <b>Location</b> <b>Design Characteristics</b>
<b>Social Climate</b>	Trust Power Cooperation Collaboration <b>Interaction</b> <b>Participation</b> <b>Belonging</b>

Maintaining common ‘constructs’ across the various groups within the respondent sample population, facilitated both the early identification of similarities and differences and the later refinement of disparate and convergent thinking between the groups and group members, through further sub-categorisation.

### 5.6.0 Phase 3: Charting

This phase of the data reduction process re-examined the selected passages of text assigned to the various ‘constructs’. Further sub-categorisation into component ‘elements’ facilitated the identification of additional patterns and assisted in highlighting associations within the data. By making the total process of organising, sorting, and sifting the data visible and accessible, others are able to evaluate the methods undertaken and to follow the logic of the argument.

In the trans-disciplinary mode of research this is an essential criterion. It enables researchers investigating a common area to contribute in a relevant way by pooling experience and knowledge, and confirming or discounting various assumptions through discussion and reflection sessions.

At this point in the analysis process, the selected passages of interview text previously identified as belonging to particular ‘constructs’, were transferred to a thematic table and grouped into their respective ‘categories’. In this way, the deconstruction process continually aided in identifying which passages and ‘bits’ of the interview transcripts were providing deeper insights. In the case of the NetWorkPlace™ study this significantly reduced the original transcripts to a more manageable data set of ‘conversation extracts’ totaling approximately seventy (70) pages. The source of each extract was coded in a way which enabled identification with a particular group of respondents, i.e. managerial, operational, or advisory, and each extract identified by transcript line numbers for back referencing if necessary.

This process was undertaken independently by each of the disciplinary researchers. These data sets were then re-analysed and sub-categories of ‘constructs’ labeled as ‘elements’ derived. This could be described as an extended process of abstraction to delve deeper into the data, to enable further linking of characteristics and patterns in the data to be established, and to facilitate synthesis of information between the various disciplinary perspectives to be achieved.

The following table indicates the format of the final ‘category’ – ‘construct’ – ‘element’ relationships (refer Table 5.8) which were established through the progressive analysis process of the NetWorkPlace™ study. The purpose of this table is to illustrate the categorised relationships which were formulated. The multitude of conversation extracts utilised in the manual analysis process are not included at this point in order to retain clarity. They did however form an essential part of the interpretive process and specific examples are included in the narrative discussion which follows the ‘analysis’ chapters of this thesis.

Several of the differing ‘element’ labels were initially repeated across the various ‘constructs’ indicating that issues did fall into particular patterns and that they were often comprised of more than one dimension. This enabled a significant amount of cross referencing to occur within and across the various categorisations, illustrating that many of the issues identified were connected and interwoven, resulting in a clearer understanding of the topics raised and the contexts within which they were considered important by respondents.

**Table 5.8 ‘Category’–‘Construct’–‘Element’ Chart for NetWorkPlacem™ study**

Category	Construct	Element	Transcript Extract	Source Reference
Infrastructure	Spatial Policies	awareness	(relevant Passages of Interview Transcript)	(relevant Respondent Code Number and Transcript Line Number)
		hierarchy		
		formality		
		control		
		complexity		
	Location	proximity		
		isolation		
		connection		
		disconnection		
		orientation		
	Design Characteristics	linkage		
		amenities		
		layout		
		community		
		supervision		
Social Climate	Interaction	security		
		technology		
		relationships		
		personal contacts		
		face-to-face		
		informality		
		tacit knowledge		
		credibility		
	Participation	trust		
		communication		
		cooperation		
	Belonging	autonomy		
		empowerment		
		adaptation		
		pride		
	identity			
	exclusion			
	symbols			

The juxtapositioning of these ‘elements’ provided many clues as to the associations which could be made from within the data. For clarity of illustration however, only those ‘elements’ which were considered as best describing the discussion extract are included in the table above. Many of these labels were conceived by collapsing a number of related ‘elements’ into a single encompassing description. This is a further example of the abstraction process necessary to make the mass of data manageable and represents a decision point in regard to information exhaustion, or literally, how much more can be learnt by extending the process. At this point it was decided collaboratively to attempt to ascertain what greater detail in regards to overlaps and associations between the various disciplines could be derived from the independent analyses undertaken.



An attempt was made to utilise the computer based software Nud\*st/QSR6 as an aid in the coding process. In this case however, it did not enhance the manual task of categorisation and iteration implemented at the outset of the analysis process to any significant degree and was consequently abandoned. The SCOP team concurred with the assertions of Behrens and Smith (quoted in Krathwohl, 1998: 321), who pointed out that using computer based analysis programs “does not render one’s assertions more valid than the time-honored method of cutting up field notes and putting sections in file folders. All qualitative analysis is a cognitive process, and all such programs can do is facilitate clerical and indexing tasks so the researcher has more time for thinking about the data.” A comprehensive explanation of the attempted use of the software package in relation to the SCOP project, together with an outline of some of the acknowledged benefits, is included in the appendices to this thesis (refer Appendix 5.4).

### **5.6.1 Refinement of Analysis Framework**

The on-going charting and team reflection process undertaken to establish the core themes of the data revealed that the ‘construct’ labeled as network relations was increasingly being referred to in theoretical rather than empirical terms, thus becoming an uncomfortable ‘fit’ in relation to the other key characteristics emerging from the data ‘elements’. This aspect of the overall project, although highlighting many issues which aided in linking or understanding certain of the ‘elements’ identified, was moving towards a deductive analytical model as distinct from the abductive nature of the original research objective.

Prior theory and research had suggested the hypothesis that high cooperation in an inter-organisational network would occur in conjunction with the structural conditions of low formalisation, high density, medium intensity, and low centrality (Williams, 2004). Although the NetWorkPlace™ study and the SCOP project identified the characteristic (and subsequently the ‘element’) of cooperation as crucial in informing the investigation, neither was concerned with the analytic generalisation being formulated by the network relations component in attempting to respond to the above hypothesis.

It was decided at this point at least in relation to the NetWorkPlace™ study, that the relevant aspects of cooperation revealed by the network relations component would be considered, but more appropriately absorbed into the social climate

'category'. Any of the structural considerations relative to relations between the networked organisations such as formal contracts were not discarded, but transferred to the governance 'category'.

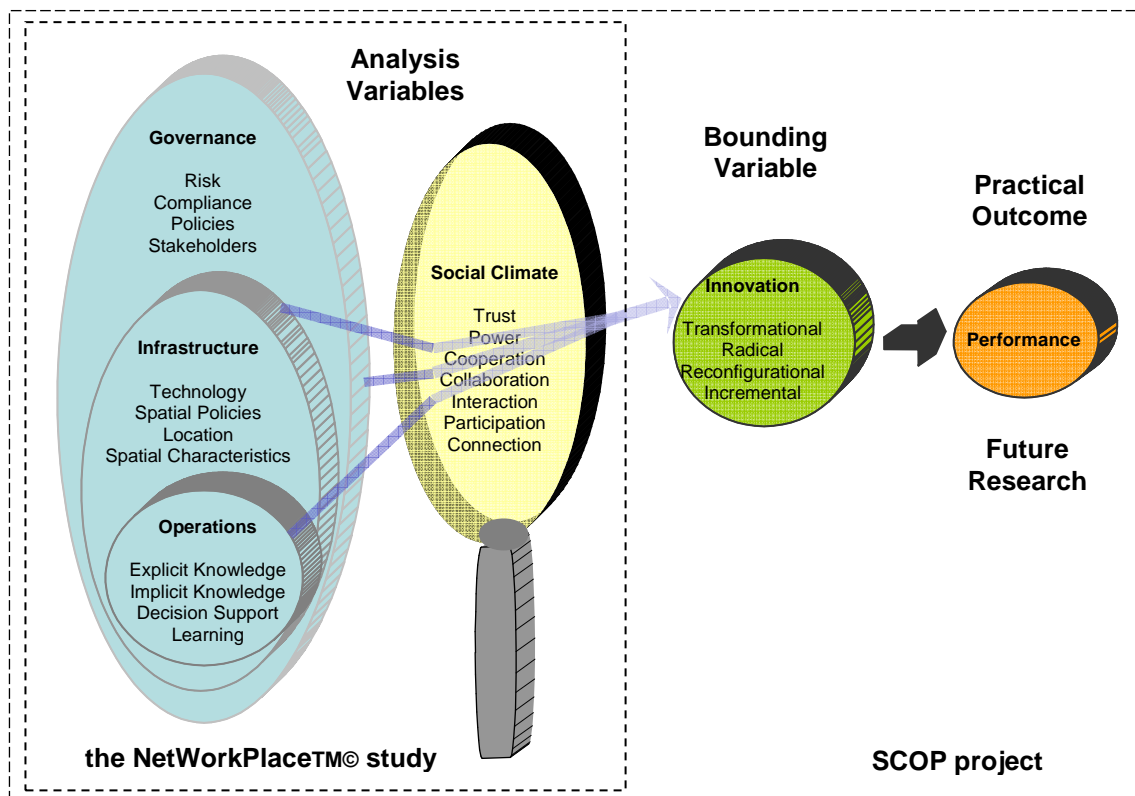
This adjustment to the preliminary framework is justified since cooperation between actor members in the network, as distinct from cooperation between the organisations of the network entity in the structural sense, had emerged as a significant influence on social interaction. This in turn, is shown later in the thesis to strongly relate to the spatial aspects of 'place' and 'flows' through a discussion on physical contiguity and also the use of technology in communication generally. A further refinement to the analysis framework includes deletion of the records management 'construct', relevant aspects of which have been included in the decision support 'construct' where applicable for analysis in the NetWorkPlace™ study.

Accordingly, the Preliminary Thematic Analysis Framework (refer Fig. 5.3) initially developed was refined through an on-going charting and reflective process and is presented following as the Thematic Analysis Model (refer Fig. 5.4). This model is designed to depict both the trans-disciplinary components and their relative juxtapositioning, together with defining the boundaries of the NetWorkPlace™ study.

The structural 'elements' are shown on the left of the diagram grouped together under their respective 'category' headings. Over-laying of the 'categories' as distinct from the separate entities depicted in the preliminary framework version, indicates the inter-dependent relationships of the components which constitute the objective reality of the network enterprise. The social climate 'category' and component 'elements' are shown adjacent to indicate, as argued previously, that a pluralist view demands the objective and subjective be considered one with the other.

The social climate 'category' is depicted as the lens of beliefs, attitudes, and activities through which the objective world is interpreted by participants in the construction of a social order. Such interaction between these, labeled as the analysis variables, is at the core of the NetWorkPlace™ study investigation leading to a better understanding of the phenomenon of being-at-work within the network enterprise context.

The rays of interrogation indicate that the bounding variable (defined as innovation in the case of the SCOP project), is both a means of containing the investigation and the desired consequence of the inter-relationship and interaction between the objective and subjective components. At the extreme right hand side of the diagram is shown the ultimate aim of the host project, an identifiable and measurable improvement in the performance of the network entity, which will become the subject of potential future research.



**Fig. 5.4 Thematic Analysis Model**

It is acknowledged herein that a 'variation' of this model developed in parallel by other members of the SCOP research team, relative to the development of a holistic methodology for analysing supply chains based on that project, has previously been published (Burgess & Singh, 2004). Given the trans-disciplinary mode of research being undertaken, striking similarities between certain models or frameworks are to

be expected and the obvious inter-dependencies warrant that no single researcher can claim absolute credit in some instances.

This eventuality reinforces the necessity to collaborate with relevant 'others' in investigating complex aspects of contemporary society. The analysis focus of each independent discipline however does provide a significant point of differentiation.

### **5.7.0 Phase 4: Mapping and Interpretation**

The final phase of the data reduction process was shown not only to be a matter of aggregating patterns, but also one of carefully considering the dynamics and salience of the issues identified in order to establish a structured interpretation of this case from the multiplicity of evidence. The charting process undertaken as Phase 3 of the analysis, provided the foundation of the detailed detection and interpretation following and may suggest misleadingly that the whole analytical undertaking was a linear, straight-forward process. Immersion in the data triggered many associations which often required back-tracking, iteration, reflection, intuition, and imagination, all however firmly grounded in the empirical evidence.

In order to articulate the Phase 4 'Mapping and Interpretation' process further, indicative examples from the NetWorkPlace™ study are provided following (refer Table 5.9). A more comprehensive list of tabulated exemplars is included in the appendices to this thesis (refer Table 5A.9 in Appendix 5.5) in order to crystallise and convey both the logic and the creative pathways followed during the analysis process. It is considered that this is a necessary approach to adopt in providing accessibility to the research methodology created for this study, particularly in regard to the abductive and interpretive thinking which, as outlined in the 'introduction' to this chapter, needs to be made explicit.

The exemplars provided herein and in the appendices, were derived from a series of individual NetWorkPlace™ analysis and (SCOP) group discussion sessions in relation to further interpretation of transcript extracts labeled under each of the 'elements' formulated during the Phase 3 'charting' process. These were then aggregated under a manageable collection of 'factors' which constitute the dominant findings to emerge from the 'Network Dimension' data reduction process. The 'factors' which are the outcome of the Phase 4 interpretation are:

- ❑ **Place**
- ❑ **Technology**
- ❑ **Interaction**
- ❑ **Governance**
- ❑ **Bureaucracy**
- ❑ **Power Dynamics**

**Table 5.9 Indicative Interpretive Outcomes for NetWorkPlace™ study**

No.	Issue	Implication
<b>factor: PLACE</b>		
1.	Most members were unaware of whether a <b>workplace design policy</b> or design guidelines existed within their own organisation or not. Those who were aware of a policy, did not know anything of its content or intent, except for the one manager who was responsible for compliance. (In fact, only one of the three firms had a documented, formal policy.)	This is indicative of the low level of awareness of workplace design issues in the organisations comprising this study, implying that workplace design and spatial issues need to be embraced by the management discipline for serious consideration before the design disciplines can truly make meaningful contributions to the effectiveness of the network.
2.	<b>Sense of place</b> seems to be strongly influenced by the level of autonomy delegated to workers, or to the physical distance away from the hierarchical centres of power, rather than on any particular design features or considerations. Some evidence of 'connection' to physical place when a level of autonomy and/or empowerment is present, i.e. the ability to control one's own space.	Implications for the levels of empowerment and authority devolved throughout the network. Further evidence that collaboration between the management and design disciplines is a pre-requisite for effective implementation of workplace design solutions.
3.	A majority of participants appear to require, or at least prefer access to a <b>variety of workplace locations and configurations</b> .	There is a consciousness at least of the fact that different functions may well be better accommodated in different environments.
4.	Feelings of <b>disconnection</b> in relation to membership of either the formal <b>network structure</b> or the <b>social network</b> due to isolated physical location. Co-location was stated as being desirable but in most cases impractical.	Implications for role of spatial relations to assist in supporting social orientation. This could be compensated for by spending time in the office of others in the supply chain to exchange information and to learn about upstream and downstream processes.

### 5.8.0 Trans-Disciplinary Collaboration Insights

The following (refer Table 5.10) provides a summary overview of the insights gained for consideration in the NetWorkPlace™ study, through the trans-disciplinary, collaborative research process undertaken in conjunction with the SCOP project. A full articulation of the 'category - construct' insights in order that the logic employed

in the process is made explicit and accessible, is included in the appendices to this thesis (refer Table 5A.10 in Appendix 5.6).

The information contained therein and the process experience generally, had a significant influence on the ability to be able to interpret the research data, form opinions, formulate a discussion, and draw conclusions in relation to the architectural design focus of the NetWorkPlace™ study.

The sequence presented is consistent with the categories and constructs as shown in the Thematic Analysis Model (refer Fig. 5.4) utilised in Phases 3 and 4 of the 'Network Dimension' data reduction and analysis process.

**Table 5.10 Trans-Disciplinary Insights Relevant to NetWorkPlace™ study**

<b>Category Summary:</b>
<b>Corporate Governance</b>
Corporate Governance structures of the individual organisations as they are presently formulated appear to be incompatible in many respects and inhibit the ability or potential for free exchange and interaction across the network.
<b>Infrastructure</b>
Infrastructure in the form of all encompassing computer systems appears to be placing too much emphasis on technology as the panacea required to solve all of the communication, data transmission, and information transfer requirements of organisations involved in the supply chain. The introduction of feral systems in isolation with no integration across the network challenges much of the logic driving the multi-million dollar investments the organisations are presently making into enterprise resource planning (ERP) systems. The role that location and physical layout play in supply chain management is clearly not something managers appear to have thought about in any depth and is an area requiring far more on-going research in order to capitalise on the possibilities that workplace design presents. It also highlights a challenge for the design professions to find ways of engaging with organisations in a network context on many other levels beyond that of mere service providers.
<b>Operations</b>
Operations knowledge appears to be well communicated through social systems. The role of tacit knowledge and why it seems to be so highly valued needs more research to determine what is driving this approach and how it can be better utilised and supported. This in turn could assist in improving the speed at which members of the supply chain can learn and improve through more appropriate physical design solutions taking account of all the issues identified in this study and in particular the integration of and interface with technology.
<b>Social Climate</b>
Social Climate data indicates overwhelmingly that a conducive social environment is needed if the objectives of the network enterprise are to be realised. The inter-relationships between the structural and social components need to be much better understood in order to implement formal frameworks, systems, processes, and supporting infrastructure which enable interaction and social relations to foster.

The insights revealed throughout the analysis process indicate how the various constructs are defined in terms of the interviewees' own responses. A deeper analysis reveals that these are inter-related in many respects due to the inter-dependency between or influence of the various issues. These inter-relationships are best illustrated in the Thematic Analysis Model (refer Fig. 5.4). As shown, this

model postulates that corporate governance, infrastructure, and operations comprise the inter-related structural components of the network, which when moderated by social climate factors, combine to produce various kinds of innovation, in turn leading to improvements in performance.

In this case, reconfigurational (or 'architectural' as defined by SCOP) innovation represents the best opportunity for improvements to be achieved in this type of supply chain through changes to the processes and the mechanisms which support them such as workplace design.

Experts involved in and consulted by the SCOP research concluded that the industries involved do not have the power to bring about transformational innovation, the economics associated with radical improvements are in the main too costly to be able to be justified, and incremental improvements are often too small to make any significant difference to the entire chain.

Such informed conjecture, reinforces the relevance of the contribution which workplace design can provide to organisational performance.

### **5.9.0 Inter-relatedness Confirmed**

Whilst the Thematic Analysis Model (refer Fig. 5.4) is comprehensive in its evaluation of this particular research effort, its future value lies in the identification of inter-related network issues. It thus provides a framework for further focused investigation to be undertaken within a network context. It also highlights the trans-disciplinary nature of a networked organisational entity.

The 'factors' established by the end of the four phase 'Network Dimension' analysis process, together with the insights enabled through contributions of the other disciplinary views, have been comprehensively covered in this chapter.

Revelations provided by the investigation into the 'Local Dimension' involving a single workplace setting are fully elaborated upon in Chapter 6 following. A full explanation of the outcomes resulting from structured observation sessions and the analysis of formal organisational documents is also provided in the reporting on the 'Local Dimension' analysis.

By necessity, the 'Network Dimension' and the 'Local Dimension' components of the NetWorkPlace™ study are reported upon and discussed under separate chapter headings in order to maintain clarity of explanation. For the purpose of 'understanding' and as an articulation of the value of the outcomes of this research, Chapters 5 and 6 are inextricably linked and together with the later narrative components, form a complete overview of the NetWorkPlace™ phenomenon.



Chapter 1 INTRODUCTION

Chapter 2 LITERATURE REVIEW

Chapter 3 METHODOLOGY

Chapter 4 CASE STUDY

Chapter 5 ANALYSIS Network Dimension

**Chapter 6 THE NetWorkPlace™ ANALYSIS:  
'Local Dimension'.**

Chapter 7 DISCUSSION

Chapter 8 CONCLUSION

## Chapter 6      The NetWorkPlace™ ANALYSIS: ‘Local Dimension’.

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### 6.1.0      Introduction – ‘The Case Within’

The ‘Local Dimension’ of the NetWorkPlace™ study has also been described previously (refer Chapter 4) as ‘The Case Within’. The focus of this aspect of the NetWorkPlace™ study was an individual workplace site accommodating a fourteen (14) member professional service/consulting division contained within the customer organisation [C], and located physically in the corporate headquarters administration building in the Brisbane CBD.

For the purpose of identification within the overall study, the group who participated have been given the pseudonym of and are herein referred to as PID (Process Improvement Division).

The stated goal of PID was to pro-actively influence and assist the continuous improvement of the larger organisation's business performance in all areas, including its supply chain functions. PID undertook an internal investigation as part of their business planning regime to identify the key factors that were driving business results within their own area and were listed as relating to:

- ❑ business process,
- ❑ people and organisation,
- ❑ technology, and
- ❑ physical workplace.

These factors aligned closely with the key issues revealed through the ‘Network Dimension’ of the NetWorkPlace™(C) study and this site was thus considered as an integral component of and a key indicator in the outcomes to emerge from the overall research.

The primary investigation was viewed from the local perspective but the significant revelations of this component aided in the elaboration of relevant issues raised in the network context.

## 6.2.0 The Breaching Exercise

Extending over a two year period commencing in 2001, the NetWorkPlace™ customer organisation [C] undertook a major refurbishment of the entire fifteen (15) floors of its corporate administration building. As part of being involved in this major project, PID recognised the opportunity to influence and experiment with the design of its own space and thus:

- understand by direct experimentation with its own processes and workplace, the relationship between the two,
- demonstrate potential future strategies and possibilities for other workplaces in the larger organisation.

PID undertook what could be described as a 'breaching' exercise (termed in their own language as an 'Alpha Site' experiment) in the approach to the planning of their office layout. This was done with the full support of their immediate manager but was viewed with some skepticism and contempt by the majority of other managers as it was seen to be, if not in absolute contravention of the standard fit-out, at least 'out-of step' with the organisational norm.

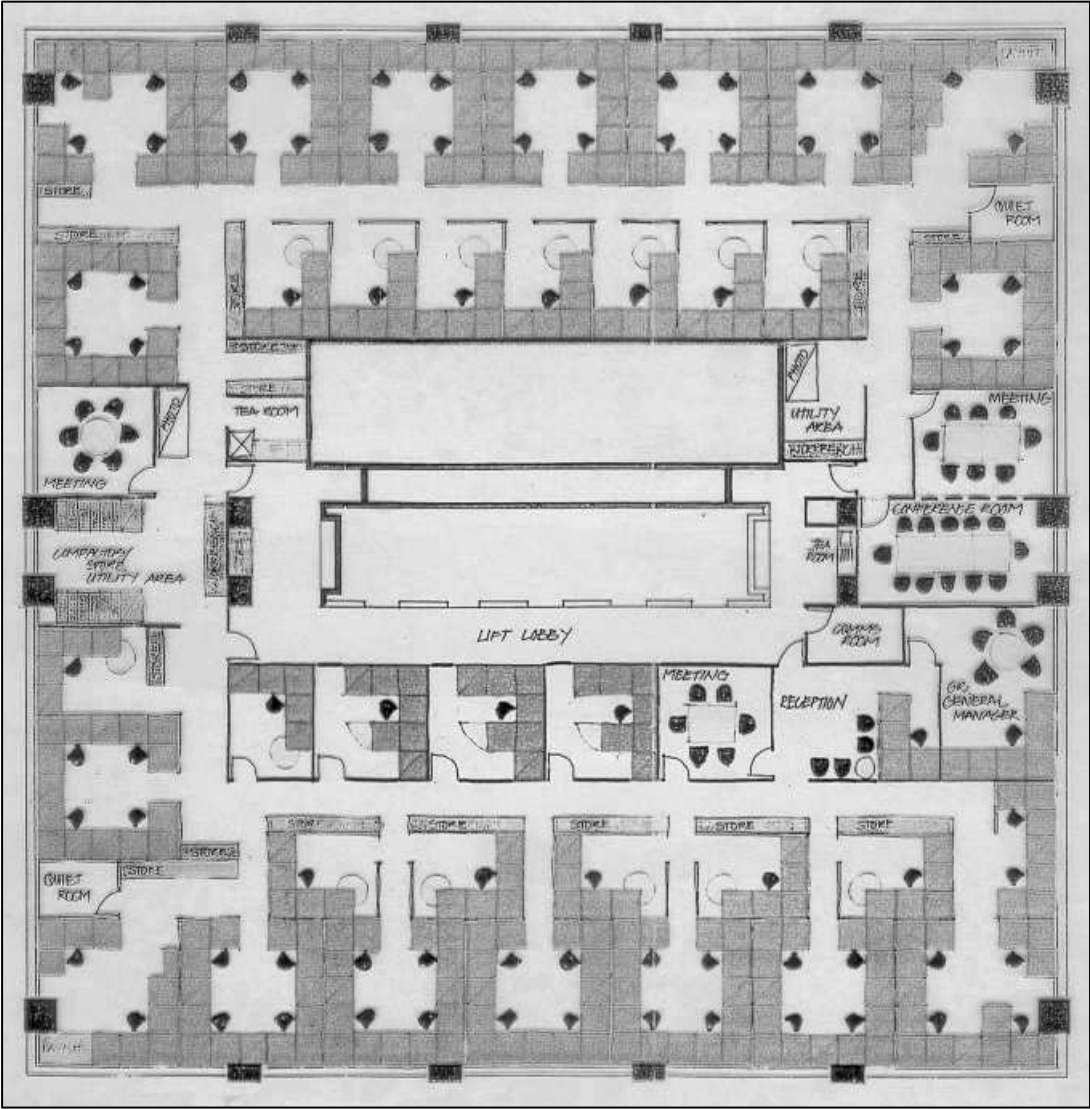
The refurbished and restructured physical workplace of PID constituted the setting for the 'Local Dimension' of the NetWorkPlace™ study. This comprised in space terms, approximately 20% of one 800m<sup>2</sup> floor within the organisation's head office building. The PID space was successfully implemented as an 'Alpha Site' experiment incorporating innovative space design solutions, achieved through a transparent, group process methodology involving all members in the spirit of a collaborative, participative, human-centered approach.

The remainder of the total building refurbishment complied with a consistent organisational 'standard' fit-out. This setting provided the opportunity to investigate a case of the 'spatial expression of cultural values' within the context of hierarchical constraints as embodied in the organisation's rules and policies, and as illustrated by the work processes, the behaviors and attitudes of members, and the transactions with and within the built environment.

This component of the overall study was operationalised through a detailed ethnomethodologically oriented investigation of how ordinary members accomplish, account for, and organise the social order of their everyday activities.

### 6.3.0 The Organisational Environment

In order to understand the PID component of the overall refurbishment project, it is necessary to understand the larger cultural context in which it was set. As originally conceived by senior management of [C], the refurbishment of their CBD administration headquarters building envisaged an identical fit-out for every floor, with meeting and service rooms around the building's core, and open workstations around the perimeter. This fit-out configuration was designed to comply with the organisation's standard 'Space Planning Guidelines' (SPG). An indication of the generic floor plan implemented is illustrated below (refer Fig. 6.1).



**Fig. 6.1 Generic Floor Layout and Fit-out**

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The major refurbishment and fit-out project was implemented within the framework of [C]'s dominant organisational culture which, using a common management classification scheme (Tracey & Wiersema, 1995; Porter, 1999; Robbins et al., 2001) was one of 'operational excellence'. This could be described as a concentration on getting a standardised product out on time and at low cost which contrasts with the more contemporary foci of 'customer responsiveness' and 'innovation'.

As was revealed by this investigation, both the focus and internal culture of PID were very different on the whole from the larger organisation of which they were a part. PID adopted a customer response focus whereas, as the 'Network Dimension' of the NetWorkPlace™ study revealed, [C] focused on achieving operational excellence whilst at the same time was constrained by bureaucratic processes and an on-going need to respond to political agendas.

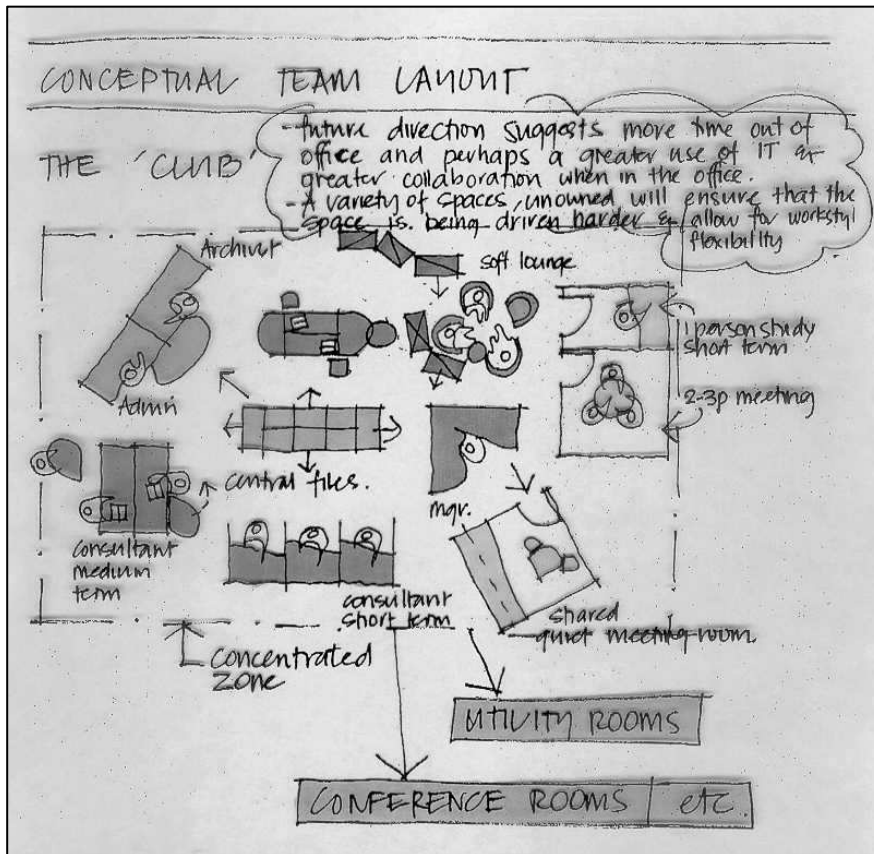
#### **6.4.0 The PID Space**

In order to evaluate the significance of the PID 'breaching exercise', it is timely to provide a detailed outline of the physical reality which was implemented. This assists in the later reflective process and provides some insight as to the connections and linkages with architectural theory and design praxis.

This information was accumulated from the systematic empirical data collection process, supplemented by additional inquiry of and conversations with the Manager and members from both within and external to the PID group. Documentation related to the design and implementation of the office fitout was made available for the NetWorkPlace™ study through the SCOP project.

##### **6.4.1 The Design Concept**

Building on PID's understanding of its own core process and its role within the organisation, a collaborative process between the members of the group and the architectural designer responsible for the fit-out identified a number of distinct spatial implications. These were developed into a 'Club' concept layout (refer Fig. 6.2) based on Duffy's (1997) typologies and formed the basis of the PID Workspace Design (refer Fig. 6.3).



**Fig. 6.2 Conceptualisation of PID 'Needs'**

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A number of specific characteristics of the design which differentiate it significantly from the organisational standard are discussed following.

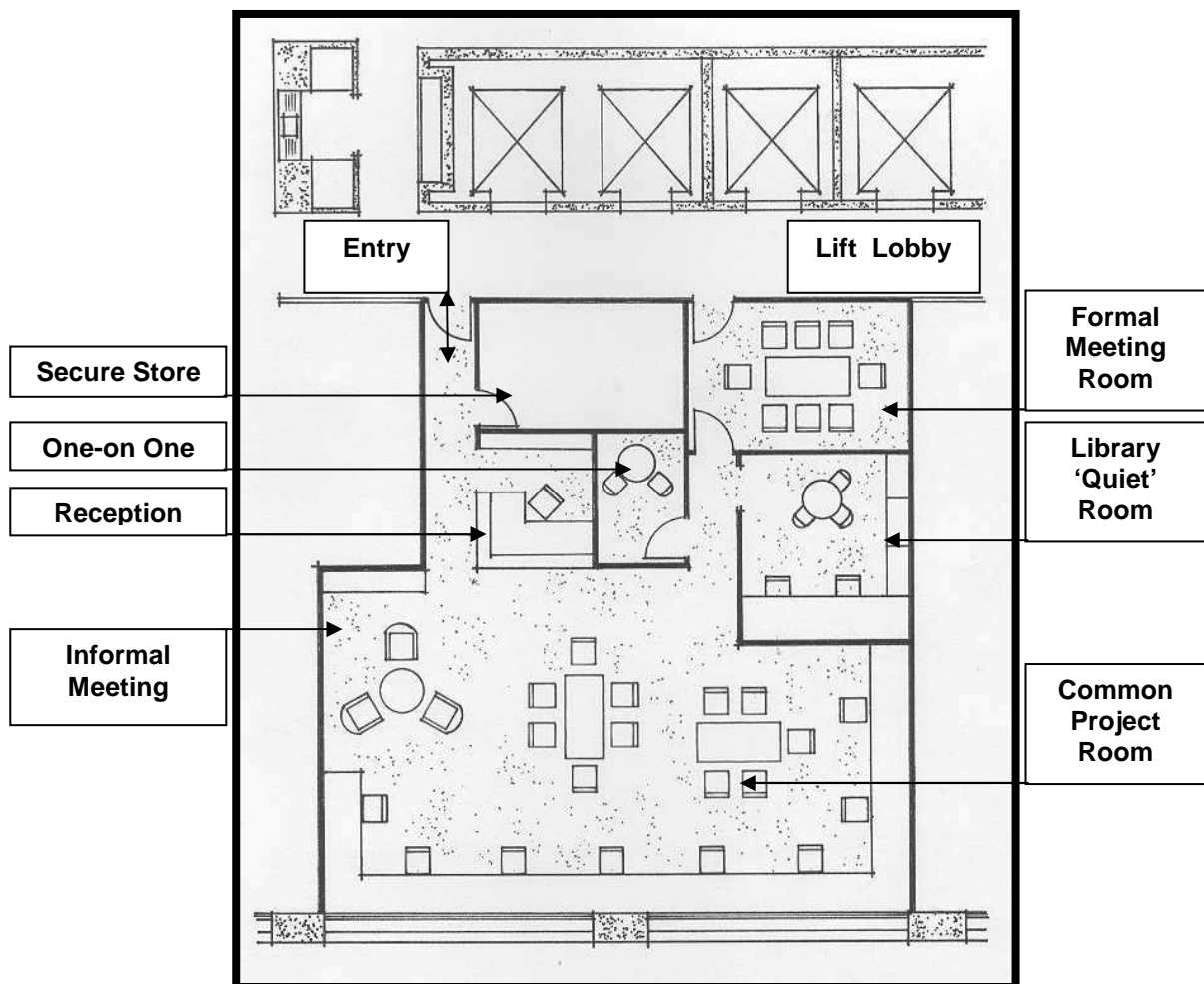
### **Free-Address System:**

PID's internal investigation showed that workgroup members spent an average of 40% of their time away from their desks. Space allocated to dedicated private desks as dictated by the SPG standards was therefore wasted 40% of the time. The ultimate design adopted a non-territoriality approach. This 'free-address' system in which space not being used was made available to others, led to more efficient use of space and therefore more space for all. In simple terms:

- ❑ in territorial space, the 60% of workers present at any particular time, would have access to only 60% of the space.
- ❑ in non-territorial space, the 60% of workers present at any particular time had access to 100% of the space.

PID's core processes, which consisted of action, reflection, and meeting, suggested three types of workspace as appropriate and included:

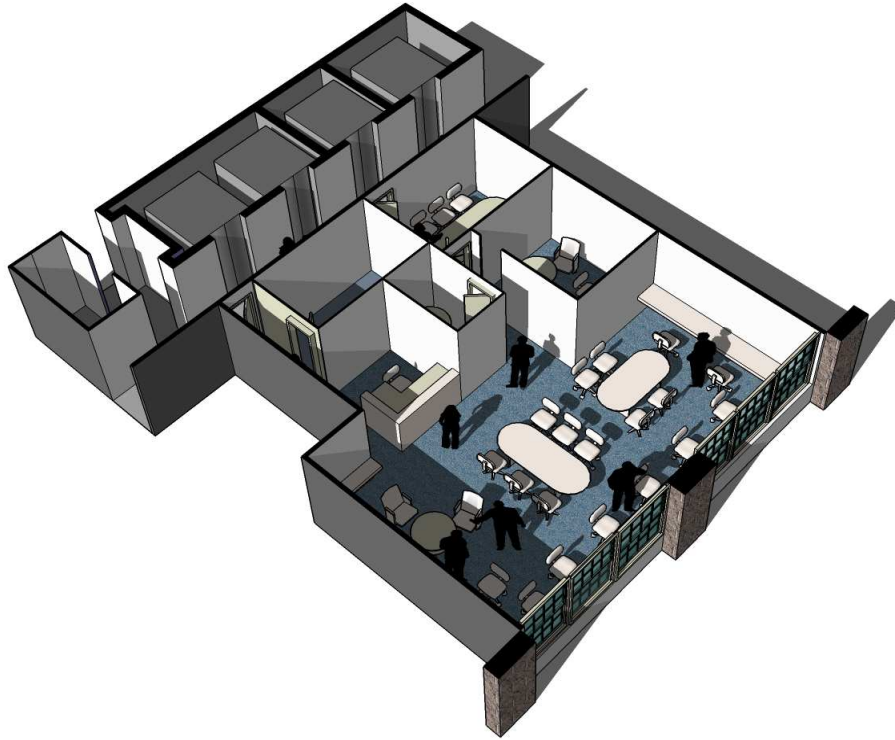
- ❑ an active projects space
- ❑ reflective quiet spaces (termed 'the library' & the 'one-on-one' room)
- ❑ dedicated meeting spaces (both formal and informal)



**Fig. 6.3 PID Workspace as Implemented**

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The final design allowed for a rich ecology of workspaces in which all of the identified processes and work types could be undertaken simultaneously within the various spaces (refer Fig. 6.3 and Fig. 6.4).



**Fig. 6.4 Sketch of 'PID' Workspace Ecology**  
(Original Sketch by Author)

### **Transient Territoriality:**

The term 'non-territoriality' suggested a complete absence of territoriality. It was felt within the group however that humans, in general, do have a need to feel some 'connection' particularly in relation to space and the approach adopted in practice was one of 'transient territoriality'. In simple terms, this meant that a worker could colonise desktop space and other resources as needed and for as long as needed. While he or she was using them (barring extraordinary circumstances) the desktop space was 'theirs'.

'Transience' demands only that once that person was to be away from their space for a period of time (negotiated within the group), that they put their papers and belongings away. It also demanded that if the general workspace began to fill beyond the average 60%, that they contract the extent of their colonised space to suit. This in turn had a number of implications for the fit-out of the space:

- ❑ flexible and contiguous worktops
- ❑ project and personal storage



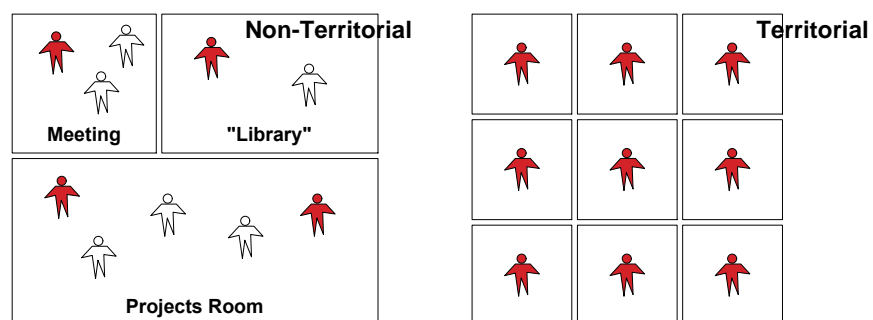
The former requirement was met by continuous benches along the window perimeter of the project room and by portable tables in the centre of the room, so that the boundaries of personal space could be stretched or shrunk to suit the population density. The latter requirement was fulfilled by three furnishing concepts:

- ❑ project pigeonholes
- ❑ personal lockers
- ❑ personal tool-kits

Both project pigeonholes and personal lockers were built into continuous open shelves which lined all rooms and served as visible, accessible storage for all shared resources.

### Domains of Responsibility:

Workgroup concerns about order and organisation are concerns about authority and responsibility. In a territorial workspace such as a traditional office or workstation, authority and responsibility are clear, the workspace owner has authority to arrange and manage the space and is responsible to one person, him or herself. In a non-territorial work environment, authority and responsibility are not immediately clear. In order to ensure that order is maintained, care or stewardship of each part of the environment has still to be vested in a single individual. That person has responsibility for and authority over that piece of space. However, whereas in the private office that responsibility is to him or herself, in the non-territorial office that responsibility is to others (refer Fig. 6.5). Within PID, this was shared on a rotational basis and further helped to build bonds within the group. This shift of focus from self to group was fundamental and was also congruent with PID's culture.



**Fig. 6.5 Domains of Responsibility**

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### **Mobile Technology:**

In order for the free-address system to work most effectively and efficiently, it was supported by a 'wireless' data and communications network. Mobile technology facilitated the PID members being able to function at multiple locations within the space, elsewhere in the building, and off-site.

### **Overall Workspace Ecology:**

Consistent with its acknowledgment of the value of diversity, the PID members recognised that different people have different workstyles and, at different times, the same people have different workstyles. From a work process point of view, all of the varying workstyles needed to be appropriately supported. A mono-cultural environment which reflects only a fixed and limited set of workstyles was acknowledged by all as not being the most efficient nor desirable.

Therefore, the final design incorporated enough variety of 'habitats' to support all the different 'species' of workstyle. This variety was important not only to support existing work processes, but also to stimulate new thinking and innovation by giving group members access to variety within their environment. As an example of this, analysis of the PID core processes showed the central role of the meeting as the principal mechanism for guiding both projects and reflective research. As a learning organisation, meetings were also important to PID as sites for the exchange of knowledge.

From a singular functional viewpoint, a traditional style meeting room would have been enough to accommodate all meetings and in the 'universal' style of design implemented across the remainder of the organisation, meetings were thus accommodated. In PID, however, this requirement was interpreted through contemporary design approaches (Becker, 1995; Duffy, 1997; Worthington, 1997; Week, 2002) into an ecology of meeting places and spaces. This is illustrated in the floor plan (refer Fig. 6.3) and perspective sketch (refer Fig. 6.4) and included:

- ❑ a traditional Meeting Room.
- ❑ a shared Projects Room, with easily moveable tables where work tasks, informal ad hoc meetings, or conferences could be accommodated.
- ❑ lounge style chairs in the Projects Room for informal meetings.
- ❑ a 'One-on-One' Room so that two-person meetings could occur without imposing upon the larger Meeting or Project Rooms.
- ❑ a meeting table in the Library (quiet workspace) where people could work together (sharing resources and information) silently.

Thus 'meeting' was not interpreted mono-culturally as an activity that required just a conventional meeting room, but in a variety of ways to support a variety of meeting styles.

#### **Appropriate Furniture:**

Appropriate items of furniture completed the design fit-out in order to support the workplace processes and included:

- ❑ Workstation style chairs
- ❑ Comfortable easy chairs or couches
- ❑ Free-standing tables
- ❑ Continuous perimeter worktops
- ❑ Open shelving
- ❑ Project pigeonholes
- ❑ Personal lockers
- ❑ Personal equipment 'toolkits'
- ❑ Lockable filing cabinets
- ❑ Whiteboards and pin-up boards for information and data display.

#### **6.4.2 Implementation**

The final floor area of the completed PID Workspace was approximately 145 m<sup>2</sup>. The workgroup consisted of 14 people, providing an average area per person of 10.4 m<sup>2</sup>. This was well within the benchmark of 14.0 m<sup>2</sup> specified in the formal Space Planning Guidelines which dictated the major building fit-out planning.

The response displayed by PID workgroup members to their new environment was highly positive and could be considered a successful implementation due to the collaborative processes which took place during the design stage. From elsewhere in the organisation however, particularly at management levels, there was a great degree of negativity displayed through actions and communicated through words both directly to PID members and indirectly in other forums within the organisation.

Because of the success of the space-sharing strategy, the PID office was perceived as being larger than the actual floor area it occupied. This could be explained in part by the fact that the PID work processes required that at any one time from one to several of the staff may have been working elsewhere and thus were absent. Therefore those who were 'in' the office appeared to enjoy more space than in the

'generic' cellular office layout. This perceived effect was amplified by the way in which the design was structured around the local work processes. In comparison, the standardised offices of the remainder of the building fit-out created waste because space was allocated not according to the specific requirements of work processes, but because of hierarchical level which demanded significantly more 'circulation' and 'separation' space. The tailored spaces of PID, which were open and free of such waste, appeared correspondingly more generous. Objectively, the space per permanent worker was no more than, and in many instances, much less than that allocated for any other section of the organisation.

### **6.5.0 The Data Collected**

Investigative techniques and methods consistent with an interpretivist orientation and an ethnomethodological approach were utilised to inform the PID component of the study. The investigative and analytical methods employed are complementary techniques but for clarity and where possible, comparison, have been discussed herein individually. They included:

1. Documentary Evidence and Analysis,
2. Non-Participant Observation and Analysis,
3. Conversational Analysis of Recorded Discussion, and
4. Focus Group Interview and Analysis.

### **6.6.0 Corporate Documents as a 'Classification System'**

#### **6.6.1 The Evidence Examined**

The documentary exhibits examined in the PID investigation consistently highlighted the formal and bureaucratic nature of the larger organisation [C]. The documents and other visual evidence reviewed included:

- ❑ Organisational Profile contained on Corporate Website.
- ❑ Video Clip created for television advertising campaign.
- ❑ Corporate Plan (part).
- ❑ Corporate Accommodation Space Planning Guidelines (SPG).
- ❑ Floor Plans and Sketches.

### **Corporate Profile**

The website profile was publicly accessible information which in very general terms, described:

- ❑ The nature and size of the business as one of Australia's major heavy infrastructure providers servicing a variety of industry and customer types.
- ❑ The structure as a commercial, Government Owned Corporation, overseen by a Board of Directors.
- ❑ The shareholders as the people of Queensland represented by a State Government Minister.
- ❑ The corporate Vision to be Australia's best business in its industry sector and the corporate Mission to achieve customer loyalty through service excellence, innovation, teamwork, and safe operations.

This information gave the impression of a large, commercially focused, innovative, safe, and reliable operation which had broken the shackles of its historical public service origins.

### **Advertising Video**

The television advertising campaign reinforced the above impression by showing a variety of slick images depicting (smiling and ethnically diverse) workers functioning in a range of job types. The visuals were underpinned by a patriarchal musical accompaniment proclaiming "We are one – We are many" which was played throughout.

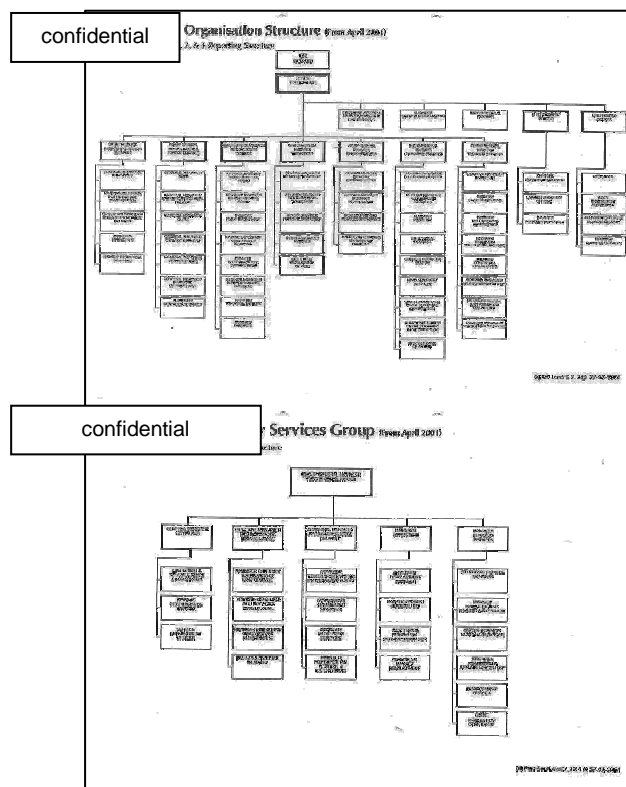
This very public image left the viewer with an impression of a happy, dedicated workforce and of an organisation which put customer service and caring above all else. Like much of the advertising with which we are confronted, this portrayal appeared somewhat glamorous when compared to the reality of doing 'business as usual' in the terms described by the study participants.

Both of the above mediums could be considered as displaying the 'public face' of the organisation, designed for mass consumption, descriptive in nature, and focused on conveying a desired perception.

### Corporate Plan (part)

The Corporate Plan, on the other hand, was a commercially confidential document compiled for the purpose of informing a selection of the Corporation's stakeholders (Qld Govt, the Board of Directors, and various levels of management). This was a comprehensive document (volume 1: 72 pgs, volume 2: 154 pgs), prescriptive in nature, outlining the corporate direction, corporate strategies, organisational structure, operational plans, financial performance reports, and future budgets for projected 12 month and 5 year time frames. The plan also made reference to the 283 employee relations and operational policies together with employee pay-rate categorisations.

Two only 'Organisation Structure' charts (refer Fig. 6.6) have been included but these are considered adequate to illustrate the typical formal hierarchy and business group (family) categorisations.



**Fig. 6.6 Organisation Structure Charts**  
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Based on a preliminary examination, the Corporate Plan document gave the impression of a highly structured, very hierarchical organisation. On the surface, the message conveyed was one of commerciality and customer responsiveness, but the reader was left with an underlying impression of rigidity and operational inflexibility.

## Space Planning Guidelines (SPG)

The impression of rigid ‘institutionality’ was reinforced by the SPG document. A stated philosophy of “promoting.....cultural development and support(ing) a highly motivated workforce” was outlined on page one, however the remaining sixty two pages were filled with prescriptive detail illustrating a vast differentiation in the hierarchical levels and rigid policies with regard to space allocation, furniture distribution, and planning implementation. The guidelines were intended for internal application by management and staff to ascertain ‘rights to space allocation’ within the organisational environment, and for designers to utilise (or perhaps to restrict options) in office layouts and configurations.

The most obvious and illuminating ‘formal’ categorisation device revealed through the investigation, which linked hierarchy (and by extension, organisational status) to the spatial dimension, was the space allocation matrix (refer to Fig. 6.7) included in the SPG document, indicating hierarchical differentiation (1-7) on the vertical axis and functional (job stream) differentiation along the horizontal axis.

ACCOMMODATION SPACE PLANNING												
Deviations from the space standards refer Section 6.6.												
The individual work space is the net personal workspace including individual furniture, equipment and chair space for each CR responsibility and functional level. It does not include circulation space outside the individual workspace. The following Table 2.3 summarises the ASP individual space standards by staff category. The areas do not reflect the value of people's work or their usefulness to CR but merely to accommodate the function and equipment necessary to allow the people to perform their job. For example, a person in the technical stream has more area than a person in the administrative/management stream because of the furniture requirements, eg plan table, to perform their job.												
Responsibility Level	Functional Level											
	Admin/Manag		Professional		Technical		Engineer/Trade		Civil Infra		Operation	
	Class	m <sup>2</sup>	Class	m <sup>2</sup>	Class	m <sup>2</sup>	Class	m <sup>2</sup>	Class	m <sup>2</sup>	Class	m <sup>2</sup>
7.	AO1 AO2 AO3	3.8	PO1	5.7	TO1	5.7	ET1 ET2	3.8	CI1 CI2	3.8	OS1 OS2 OS3	3.8
6.	AO4 AO5	4.9	PO2 PO3	7.2	TO2 TO3	7.2	ET3 ET4 ET5	3.8	CI3 CI4 CI5	3.8	OS4 OS5 OS6 OS7	3.8
5.	AO6 AO7	9.4	PO4 PO5	13.8	TO4 TO5	10.8	ET6 ET7	4.9	CI6	4.9		
4.	AO8	17.3	PO6	17.3	TO6	17.3						
3.	Band 3 Step 1 Band 3 Step 2 Band 3 Step 3 Band 3 Step 4 17.3m <sup>2</sup>											
2.	Band 2 Step 1 Band 2 Step 2 Band 2 Step 3 28.6m <sup>2</sup>											
1.	Band 2 Step 4 Band 2 Step 5 Band 2 Step 6 Band 2 Step 7 49.9m <sup>2</sup> including ensuite											

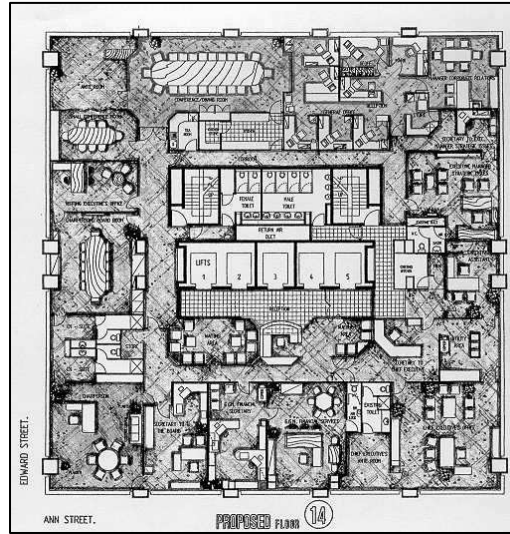
TABLE 2.3  
SPACE STANDARD BY CATEGORY

**Fig. 6.7 Space Allocation Matrix extract from SPG (indicating formal membership categories)**  
Reproduced by permission - SCOP

Embedded in the table are the ‘allowable space allocations’ for the various membership categories. These differentiations were also graphically depicted in the examples of ‘Individual Workspace Footprints’ included elsewhere in the SPG document. Interesting examples of terminology used within the space matrix table, most notably the words ‘class’ and ‘deviation’ are referred to later in the interpretive aspect of the discussion contained within this thesis.

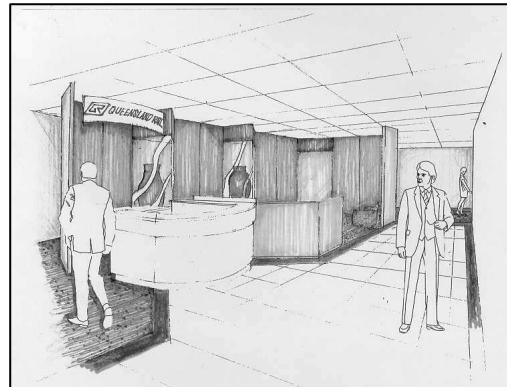
## Floor Plans and Sketches

A selection of floor plans and sketches illustrate that the physical manifestations of the organisation's characteristics mirrored the impressions which emerged from other documents and investigative sources. The Executive Level floor plan (refer Fig. 6.8) depicted the 'spaciousness' and 'opulence' afforded to the senior members of the organisation (Chairman of the Board; CEO; Deputy CEO) in the offices and associated dining and conference rooms. This 'top' floor was a dedicated 'no-go' zone with special security clearance being required for entry by all but senior management.



**Fig. 6.8 Executive Level Floor Plan**  
Reproduced by permission - SCOP

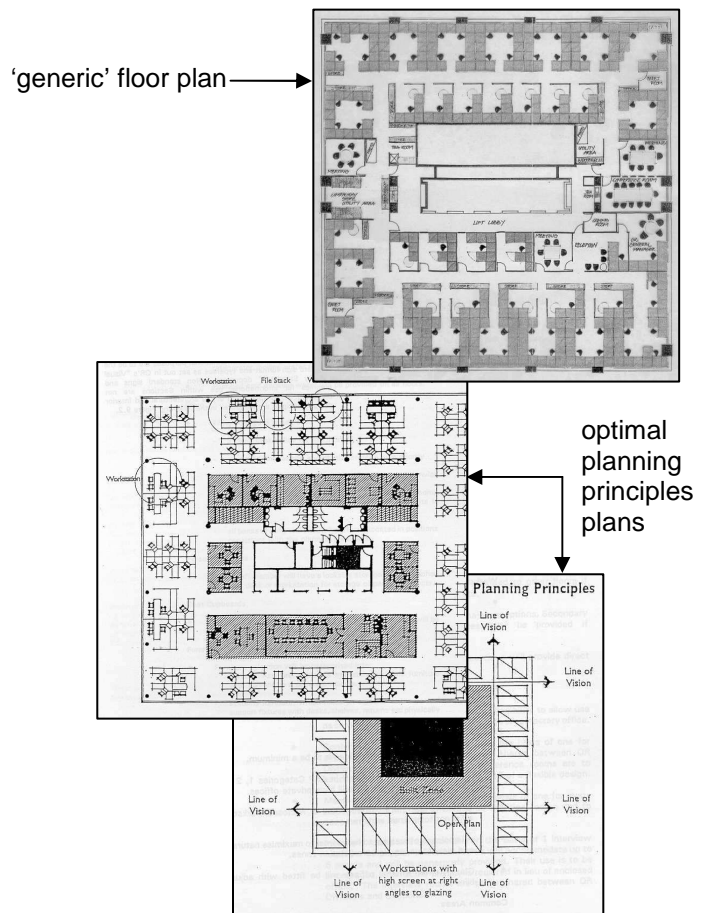
Sketches of lobby areas to floors (refer Fig. 6.9) where senior managers were located depict a much higher standard of décor and finish than is afforded the 'workers' floors. These also highlight the 'gate-keeper' function performed by the reception area, reflecting the pre-occupation with security discovered in the Network Dimension of the study. These areas may also be considered as portraying the 'front-stage' image of the organisation.



**Fig. 6.9 Management Lobby Area: 'front stage'**  
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The 'generic' floor plan depicted the 'standard' cellular arrangement of workstations distributed throughout the majority of the organisation, highlighting the 'back-stage' reality. It also showed that the only enclosed office (which was afforded a 'high status' window location) was that of the senior level manager. In strict terms this contravened the SPG criteria which determined that all offices would be internal, that is, adjacent to the lift core, a 'dictum' clearly indicated in the instructional text and on the associated Optimal Planning Principles plans contained in the document.



**Fig. 6.10 Generic Floor Plan: 'back stage' and Optimal Planning Principles**  
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### 6.6.2 Membership Categorisation

It was considered that Jochim's (1981: 13) interpretation of cultural behavior; that of "being studied not so much for what it is (learned patterns of behavior) as for what it does (provides one means of adaptation)" was applicable in this context. The categories aligned with status and identity that members were assigned or adopted, were thus significant indicators in understanding how social worlds were organised in this setting.

The level of hierarchical differentiation conveyed in the corporate documents studied, indicated that this organisation [C] as a whole, worked as a closed system, with positions, roles, levels of power and authority, and consequent behavioral expectations quite clearly defined in an explicit manner. The formal categorisations

were ordained and pre-determined in an attempt to establish an imposed order upon the social world of the organisation. The technique of using Membership Categorisation Devices (MCD's) devised by Harvey Sacks (Silverman, 2001), provided a means of separating the components of the organisation to help understand and describe the spatial outcomes. This was particularly apparent when contrasted against the open, self-organising system employed in the PID work processes. Both explicit (formal) and implied (non-formal) categories were employed in the analysis and through the discussion are shown to be equally useful tools. Silverman (2001: 140) quoted Sacks' description of MCD's as, "what one ought to seek is to build an apparatus which will provide for how it is that any activities, which members do in such a way as to be recognisable as such to members, are done, and done recognisably."

Explicit classification systems referred to above can be adapted from:

- ❑ Organisational charts indicating the different business groups and the levels of hierarchy within.
- ❑ Space Planning Guidelines defining workspace allocations for the various levels of the hierarchy.

Both of the above highlighted the hierarchical nature of the social order, however it was the SPG, through the space allocation matrix outlined earlier, which provided the most tangible evidence to support the existence of a highly stratified society within the organisation. The difference in space allocation between individuals ranged from 3.8m<sup>2</sup> for the lowest administrative categories up to 43.2m<sup>2</sup> including an en-suite for senior executive managers (Responsibility Level 1). There was no maximum limit defined for the CEO or the Chairman of the Board implying that they had the capacity to make their own rules.

With reference to the formal documented categorisations, it was confirmed through interviews that employees of the organisation were expected to recognise activities or behaviors of other members relative to their category membership. These activities were driven or guided by a learned 'set of rules' which comprised the norm or standard mode of acting and engaging within the organisational context. These norms were the consequence of the members wider socialisation experiences, tailored to 'fit' accepted and expected behavior within the organisational constraints.

The 'economy rule' as defined by Sacks (Silverman, 2001: 141) applied to many of the membership categorisations which could be utilised in this organisation. For example, a member belonging to a particular business group was expected to

display characteristics in their activities typical for that particular 'family' grouping. Similarly, a member categorised as belonging to the administration stream or the professional stream was expected to act in accordance with their particular role category. This being the case, these categorisations can be termed to be referentially adequate. The 'consistency rule' also defined by Sacks (Silverman, 2001), was very evident in the hierarchical order which prevailed. This was illustrated when members of a particular business group were categorised either the same as others in the group, or by some other category belonging in that 'family' grouping. Thus those who undertook completely different jobs, may still have been categorised similarly because they worked in the same business group or organisational division.

'Duplicative organisation' (Silverman, 2001) can be said to have applied very strongly to this case in the way the organisation was divided into the various business units (or whole social families). For example, the organisation structure chart indicated that there were nine (9) units which constituted the formal MCD. Within these units resided numerous examples of 'standardised relational pairs' (SRP's), that is, certain rights and obligations that one party could expect to give to, or receive from the other. In practical terms, this was mirrored by the relationship between the management level and those lower in the unit hierarchy.

'Category-bound activities' (Silverman, 2001) were best illustrated within the variety of work streams outlined in the organisation's pay-rate schedules. A member of the (AO) administration stream would be expected to undertake administration and clerical activities; whereas a member of the (PO) professional stream would more likely be involved in a professional discipline such as engineering or accounting; and a member in the (TO) technical stream would be engaged in an activity such as electrical, plumbing, or other trade work.

These were reinforced through the formal job descriptions which define a person's role and thus their 'place' in the organisational hierarchy. However, members of the organisation had an inherent (or learned) knowledge of the various category-bound activities or attributes associated with another members 'stream' classification through their acquired common-sense organisational knowledge.

Positioned categories could be seen to apply in the hierarchical structure and can be likened in some sense to stages of maturity or development in the broader social context. A member at Level 1 (in say the AO or PO stream), would be expected to

act quite differently from a member at Level 7 (in the same stream). The organisational context mirrors life in this situation as levels of advancement (lower to higher) generally are characterised by an increase in either age or experience.

Silverman (2001: 147) concluded that “many categories can be used to describe the same person or act” and suggested “how (members) go about choosing among the available sets of categories for grasping some event.” Sacks (1992) illustrated the point made by Silverman whereby the mediation of alternative perceptions for certain acts or activities are sought through the choice made in regard to justification or rationalisation of the said acts.

The PID ‘breaching exercise’ could be considered in this light through a desire by the PID members not to be seen to be rebelling against the wider organisation in their actions to create a workplace setting which was different to the ‘standard’. Their carefully constructed and open process was intended to manage the perceptions of others within the organisation who were identified as potential threats to the implementation of their strategy. The success or otherwise of this approach is made evident as the discussion in this chapter is developed further.

Overall, the language and tone used in each of the documentary examples was understandably official and instructional, with the exception of the television commercial which targeted a quite different audience (the public and customers) and was more casual and descriptive. The public and private-face exhibits described, elicited contrasting images about the world contained within the organisation.

These aspects are further compared and clarified through the additional investigative methods employed in this study. It was apparent that ‘readers’ of the ‘institutional’ documents who were members of the organisation were expected to ‘know their place’ and to act and treat other members accordingly, determined most often by ‘hierarchical position’ and/or perceived status within this context.

## **6.7.0 Observed Behaviours in Space**

### **6.7.1 The ‘Social Occasion’**

The PID investigation observed participants engaging in a particular institutional ‘meeting’ activity. The observations undertaken facilitated a comparison of two

contrasting events which focused on the members interacting with each other and transacting with their environment. All societies tend to formulate their own rules and codes of conduct which determine appropriate behaviors. "In our society the code which governs substantive rules and substantive expressions comprises our law, morality, and ethics, while the code which governs ceremonial rules and ceremonial expressions is incorporated in what we call etiquette" (Goffman, 1967: 55). The PID study concentrated primarily on the ceremonial aspects and the observed etiquette to inform the analysis. Goffman (1967: 114) outlined his interpretation of the 'obligations of involvement' as follows: "In our society a system of etiquette obtains that enjoins the individual to handle these expressive events fittingly, projecting through them a proper image of himself, an appropriate respect for the others present, and a suitable regard for the setting."

Strong (1988: 231) emphasised that a central argument in much of Goffman's work is that the ceremonial order, or the etiquette of any social occasion has "a profound importance for the viability of the micro-social order." The observations recorded in the investigation of this case displayed either explicitly, or implied the relevance of the relationship between roles and manners in the minor courtesies or signs of deference afforded to the symbols of authority and status residing with certain member categories. "Individuals, like other objects in this world, affect the surrounding environment in a manner congruent with their own actions and properties. Their mere presence produces signs and marks" (Goffman, 1970: 4) These actions pertain to what is transpiring and thus meaning-making is very much bound to context. When members engage with or find themselves in the immediate presence of others, they tend to do so as participants of "a social occasion" (Goffman, 1963: 18). This refers to a social affair or event, bounded in regard to place and time and typically facilitated by fixed equipment. "A social occasion provides the structuring social context" and this has quite specific implications in that "the behavior of an individual while in a situation is guided by social values or norms concerning involvement" (Goffman, 1963: 193).

Observational sessions were undertaken on two separate occasions within the same location of the PID workspace entailing what appeared on the surface to be similar functions, that is, 'doing a meeting'. These proved to elicit quite different data sets and hence, different perceptions of the participants' behavioral patterns. The focus of the observation sessions was to study participants interacting with each other, and with and within the built environment of the flexible PID workspace.

Brief overviews only of the activities pertaining to the two different social occasions observed are described herein with more comprehensive descriptions being included in the appendices to this thesis (refer Appendix 6.1) for further reference.

### 6.7.2 Meeting No 1

A formal project coordination meeting attended by a group of 16 people, 4 members of the 'home' (PID) workspace and 12 members from elsewhere in the organisation (hereafter referred to as 'foreigners') is the subject of the first observation session. The 'home' members were part of the active project team whilst the 'foreigners' represented client business groups' interests. The usual configuration of the PID space as layed out for 'normal business' is indicated in the adjacent diagram (refer Fig. 6.11).

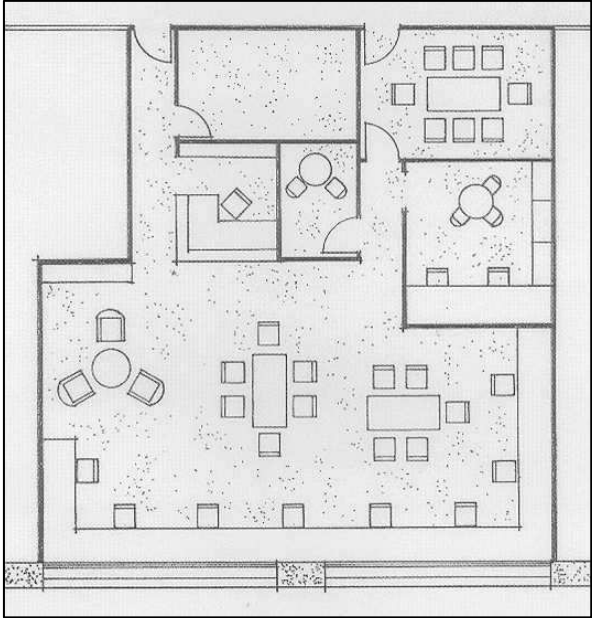


Fig. 6.11 PID – usual configuration

For the purpose of the 'formal meeting' the room was rearranged as shown in the adjacent diagram (refer Fig. 6.12) with a long table set up in the centre of the space, seating arranged uniformly around the table, a video projection screen set slightly off-centre at one end of the room so as to be easily viewed by all.

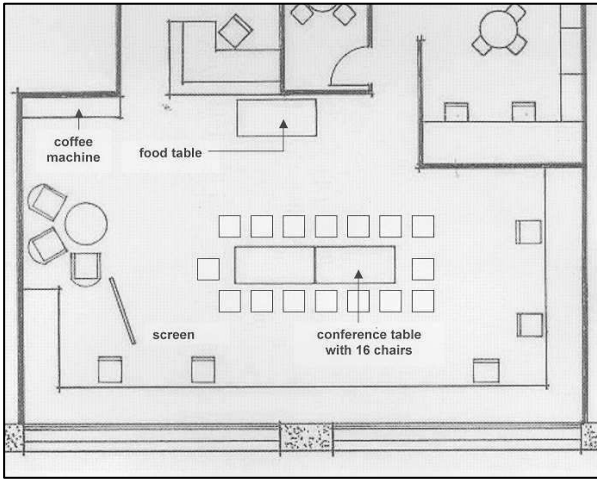


Fig. 6.12 PID – formal meeting layout

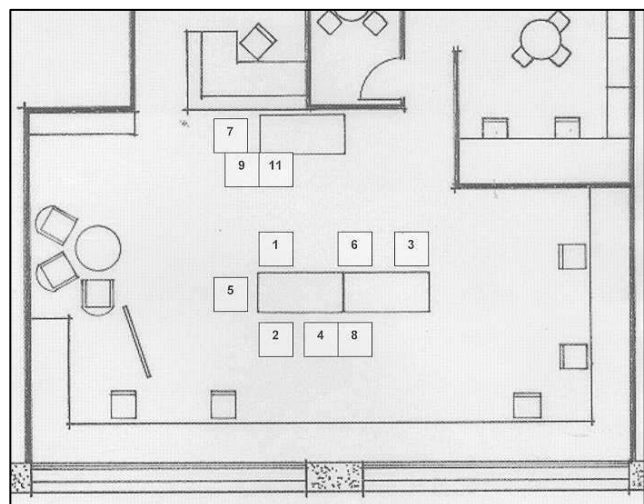
For the first 30mins, the only speakers were the meeting Chairperson and the Project Coordinator. At least 3 of the other participants displayed a degree of disinterest in proceedings and were seen to 'drop off to sleep' for short periods, particularly when visuals were being displayed on the screen. When invited to contribute, two of the 'foreigners' provided most of the interaction. These

participants were clearly older than the remainder and the degree of authority displayed indicated that they were probably 'higher up the food chain' in a hierarchical sense, or more precisely, held higher positions in the organisation. This tended to indicate a deference to 'known' authority by the majority of members. These two had gravitated to the same member 'clique' during the initial positioning phase.

The discussion was quite orderly and formal (institutional) initially with polite behavior and regular turn-taking being displayed. At a point in the discussion upon which there was obvious disagreement, four of the other 'foreigners' joined in and many participants interjected and talked over each other. 'Home' members contributed at this time in a conciliatory manner and the meeting was ultimately brought to order after the Chairperson suggested a way to resolve the disagreement.

During the meeting, four 'home' members not involved in the proceedings continued to work quietly at the perimeter benches, seemingly oblivious to the adjacent activity, but obviously conscious that it was the priority activity within the total space. Some of the 'foreign' participants in the meeting displayed a level of discomfort that others not connected to their activity were present within the same space. This was obvious from many side glances and talking behind hands whilst discretely gesturing towards these workers.

At the conclusion of proceedings (refer Fig. 6.13), four 'home' members and three 'foreigners' remained behind to discuss aspects of the proceedings for a further 10 minutes. Three additional 'foreigners' retired to the food remaining on the side table and stayed chatting socially for approximately 5 minutes, bidding courteous farewells before departing. This indicated a distinction between the 'work'



**Fig. 6.13 Post-meeting – member orientations**

clique of team members who displayed most of the authority and power (and in fact it is not unreasonable to extend this assumption to include 'interest') in the wider

project during the meeting, and the 'social' clique who spent no more time 'doing business' than was socially acceptable.

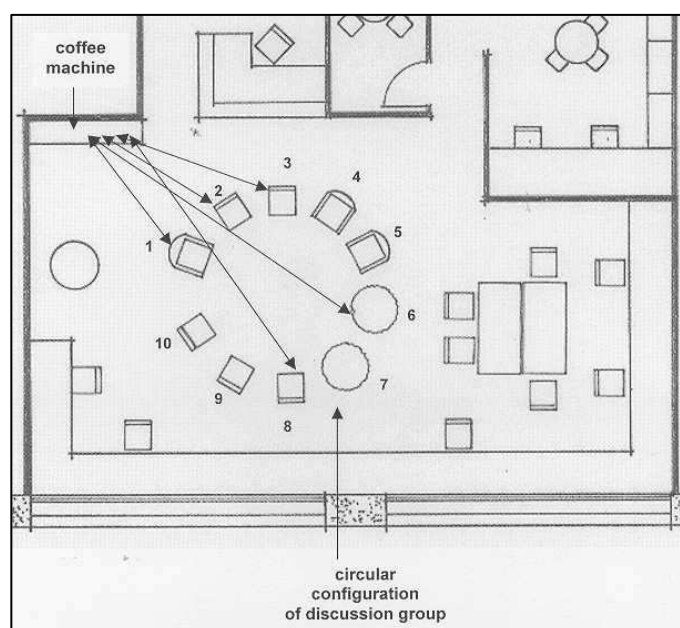
The meeting activity displayed very formal characteristics and indicated that most participants seemed familiar with each other and appeared to understand the roles that each was playing. Various members were obviously driven by quite different motivations and purpose in their presence at the meeting. It also illustrated strong interaction between a few and no interaction between others. The behaviors indicated an apparent consciousness by participants of 'knowing their place' in the process and an obvious, although possibly not a conscious deference to the hierarchical differences. The most apparent impressions resulting from the meeting interaction and the behaviors displayed, were:

- ❑ the high level of formality,
- ❑ the obvious hierarchical or status differences between members, and
- ❑ that the majority of participants who were visitors to the PID office appeared uncomfortable in the foreign (to them) surroundings.

All members appeared however to abide by what Goffman (1963) referred to as the rule of behavior that seems to be common to all situations and that is the rule obliging participants to 'fit-in'. The behaviors displayed a 'knowingness' of and a 'willingness' to comply with the rules of engagement in this interactional meeting context and we are reminded by Schwartzman (1993: 43) that "meetings (are) important for seeing one's place in the organization."

### 6.7.3 Meeting No 2

In comparison to the formality of the previous situation, observations in this instance were undertaken of a fortnightly 'team' meeting attended solely by 'home' members. The setting was arranged by dispensing with the tables, allowing members to organise themselves in a circular configuration, with some



**Fig. 6.14 Orientation of Members during informal PID team meeting**



members utilising office chairs or lounge-chairs and two members opting to sit on cushions on the floor. Ten members of the team were present whilst the remaining four were dispersed in other locations throughout the State consulting with clients, thus enforcing their absence.

The meeting was initially addressed by the PID Manager with each member then taking a turn around the circle to informally discuss their current projects. The turn-taking was smooth and uninterrupted and signalled by a nod and a verbal invitation from the speaker for the next participant to take-up the discussion. A relaxed, but orderly atmosphere prevailed.

Open discussion regarding work, general office and social issues followed in what seemed to be a natural progression. The tone of the discussion became more light-hearted but remained respectful, with each member having equal opportunity to speak and each providing approximately equal contribution to the proceedings. Turn-taking was unpredictable with each member waiting for the appropriate opportunity, or invitation, to become the spokesperson.

During the course of the meeting, five of the members made their way to the coffee maker without this appearing to disrupt the proceedings. In fact, much of the discussion continued whilst and between members who were moving about. 'Breaking of ranks' appeared to be a normal and accepted mode of behavior. The precise 'rules' governing this gathering were difficult to discern and document. It appeared almost as if there were no rules, beyond the normal social conventions of politeness and mutual respect. The lasting impression was one that this group was comfortable with each other's company and comfortable 'in their surroundings'.

The 'interaction-order' which prevailed, indicated that a 'bond' between members had been formed and a common 'culture' established over time. Behaviours displayed within the setting inferred more of a sense of 'being at home' rather than 'being at work'. This indicated a sense of 'belonging' which was in stark contrast to the behaviors displayed by 'foreign' members in the previous observations of a formal meeting situation between members of mixed categories.

#### **6.7.4 Comparison of Social Occasions**

The differences highlighted in the situations described above provided the opportunity for some illuminating comparisons to be made. There may well have

been deep-rooted causes related to individual personalities or to the issue of group dynamics which could provide alternative explanations. However, the focus of the study was on the 'meaning-making' by members, realised through the spatial expression of person–person and person–environment interactions. Together with the support of the other techniques of investigation employed, these observations lead to the following conclusions being drawn:

1. Ownership (or homeship) of the physical space and the opportunity of having had significant input to the design process, appears to have had a positive impact on the ability of members to interact, both with each other and with their environment.
2. The degree of formality compared to the degree of casualness was doubtlessly also affected by a number of 'unseen' variables. However, based on the facts of this case, spatial expression of the built environment appeared to facilitate the emergence of contrasting behavioural patterns when members of various categories were confronted by different contextual considerations. Although the underlying purposes of the two situations observed were similar, it appeared that those more familiar with formal proceedings (as described in Meeting No 1) would have been more comfortable in a traditional, enclosed, private room designed for a specific 'meeting' function. This was contrasted against the meeting place 'convened' within the multi-function project space (in Meeting No 2) where there appeared to be more licence to act with a degree of freedom and flexibility without fear of reprisal from other members.
3. The traditional meeting table compared to the circular format provided an interesting and obvious contrast facilitated by furniture placement and usage. The table appeared to reinforce the organisation's entrenched hierarchical differentiation and sense of 'separateness'. It also provided enough material symbolism within the 'open space' to facilitate the meeting. The circular format provided both a symbolic and practical expression of 'togetherness' and 'continuity', of equitable status, and equal opportunity to become involved in the activity. This may have been assisted due to the lack of (and in the circumstances no need for) the table, which provided both a physical barrier and somewhat of a security symbol in the formal arrangement of Meeting No 1.

It is not being suggested that one spatial concept is right or wrong in an absolute sense. However, the foregoing observations reinforce the argument that spatial expression (in both the practical and symbolic sense) is an important element in considering how an organisational group with particular cultural values, or as Bourdieu (1990) referred to it, similar 'cultural capital', are most appropriately 'accommodated'.

## **6.8.0 The Institutionalality of Conversation**

### **6.8.1 Information Seeking and Advice Giving**

An example of the 'institutionality' of information seeking and advice giving in an organisational workplace setting was provided through conversation analysis (CA), utilising data collected as part of the PID component of the NetWorkPlace™ investigation. It probed the 'institutionality' of a transcribed conversation between two managers from the network organisation [C] under investigation. The topic of the conversation concerned a request by one to the other for advice regarding how the design of the new PID office layout was conceived, achieved, and ultimately implemented.

"Erving Goffman ..... established that social interaction embodies a distinct moral and institutional order" (Heritage, 1997: 161). Goffman's concept of the institutional order of interaction was extended by others in the field of CA who established that such practices make social action and interaction, mutual sense-making, and social reality construction possible. Lemert and Branaman (1997: lxxvii) illustrated three main points to consider in framing the analysis of talk or conversation: "first, that talk is governed by social rules and common understandings; secondly, that talk is always a form of social interaction; and thirdly, that talk is a loosely anchored performance aimed at establishing the alignment of a participant in social interaction."

The idea of institutional orders of interaction were explored through the outcomes of the 'workplace interaction' under analysis and further illustrated by highlighting how the institutional orders *in* interaction have been enacted and managed by the two participants. The two managers who were the participants in this conversation are what Fetterman (1989: 59) described as "key actors". This implies that potentially they are able to provide a deeper insight due to their roles as "cultural brokers,

straddling two cultures” in the organisation. From the insights provided through the ‘Network Dimension’ of the study, it is debateable how much boundary straddling actually occurs in contemporary organisations. It appeared that among other influences, the greater the opportunity provided by the technological revolution for ‘networking’ and ‘boundary crossing’, the greater the incidence of withdrawal into a known comfort zone. The tendency to revert to protecting one’s immediate territory increased.

From a theoretical perspective, interaction through discourse has been argued as being institutional in at least three ways (Drew & Heritage, 1992; 1997; Silverman, 1997). These characteristics were dominant in the PID workplace example and illustrated following:

1. At least one of the participants (the Enquirer) had a specific goal in the interaction, that was, to gain information on reorganising the workplace setting for which he was responsible in an organisational management role. This request further created an opportunity for (the Advisor) to spread his own message in providing advice and thus fulfill his organisational (or institutional) obligation or goal of providing a professional (Process Improvement) service.
2. The conversation was constrained, or more appropriately, restrained by the scope of the interaction’s initial intent, that of one participant seeking information and the other providing advice, within the organisational bounds. The roles of the participants in the organisation, combined with the roles determined in their specific, yet temporary interaction, set the parameters of the discussion topic and created the degree of flexibility for digression within what was ‘socially acceptable’ in the context.
3. The inferential frameworks and procedures specific to the context were empirically visible in the way the conversation participants “buil[t] the content of their talk *in and through* their talk” (Heritage, 1997: 163).

### **6.8.2 The Analysis Technique**

There is no intention within the body of the thesis to painstakingly trowel through the conversation transcript and each of the examples which have enabled insights into the institutional interaction to be gained. In keeping with the commitment to making the analysis process of the NetWorkPlace™ study transparent and reproducible

however, the full 'Institutionality Conversation Transcript' which is the subject of this section is provided as an appendix (refer Appendix 6.2). The specific techniques and characteristics of CA developed and utilised by Sacks (1992), Heritage (1997) and others to provide meaning to the utterances, *in* and *of* the talk experienced, and employed in the analysis process of the NetWorkPlace™ study are listed below:

1. Interactional Sequences
2. Turn-taking Organisation
3. Overall Structural Organisation of the Interaction
4. Sequence Organisation
5. Turn Design
6. Lexical Choice
7. Internal Asymmetries

An extended discussion on the application of the above in this particular case is also provided in the appendices to the thesis (refer Appendix 6.3) in conjunction with the conversation transcript.

### **6.8.3 Institutional Interaction**

Shegloff and Sacks (cited in Holstein & Gubrium, 1994: 265) noted in regard to the conversations they observed: "Insofar as the [conversational] materials we worked with exhibited orderliness, they did so not only to us, but for the co-participants who produced them. If the materials were orderly, they were so because they had been methodically produced by the members of society for one another." Similarly for the conversation analysed in this case, the 'institutionality *in* interaction' has been an orderly, methodical production *of* an interactional sequence by the participants for one another.

Throughout the conversation analysis undertaken, the 'institutionality *of* interaction' revealed a strong cultural and procedural connection between the PID group and the spatial outcomes of the 'Alpha Site' experiment. From the conversational interaction analysed, it was concluded that a particular spatial outcome was strongly influenced by the culture of the inhabitants and how much they were empowered to act autonomously. It can be further concluded that the spatial outcomes were thus dependent also both directly and indirectly on the style of management in operation. Based on the evidence revealed in this case, it seems unlikely that the PID outcome

would have been replicated under a strict command and control style of management typical of the majority of the organisation [C].

## **6.9.0 Process and Culture Related to Space**

### **6.9.1 Focus Group Interview**

Interviewing has been described as “a way of generating empirical data about the social world by asking people to talk about their lives” (Holstein & Gubrium, 1997: 113). Interviews can be viewed as special forms of conversation about peoples’ experiences. The focus group interviews undertaken aimed to elicit an understanding of the PID workspace experience as interpreted by the members of that group who were responsible for the creation and occupation of the space. What was relevant to the outcomes of the focus group interviews was that the understanding was derived from respondents’ abilities “to convey situated experiential realities in terms that are locally comprehensible” (Holstein & Gubrium, 1997: 117). By analysing how people talked, insights were gained into their particular cultural world and their collection of values and beliefs.

Access into this world of beliefs was achieved through the use of the technique known as the Membership Categorisation Device (MCD) as a resource for sense-making of utterances. “Tracing members’ use of these categories and devices in any settings, including interview settings, is a means of showing how identities, social relationships and even institutions are produced” (Baker, 1997: 132). Holstein and Gubrium (1997: 127) claimed that it is not enough, “merely to describe the situated production of talk, but to show how what is being said relates to the experiences and lives being studied.” This was achieved from “an ethnomethodologically informed social constructionist approach that considers the process of meaning production to be as important for social research as the meaning that is produced” (Holstein & Gubrium, 1997: 114). This approach underpinned the analysis of the PID Focus Group interview data and the utilisation of the MCD as an analytical technique.

The focus group consisted of four female participants out of a total PID population of seven male and seven female members. This represented a 28.5% sample and could be said to have contained a gender bias. However the results of the session indicated a high level of consistency in beliefs, values, and attitudes and the

impression gained from sustained contact over a period of time, was that the utterances offered up reflected the thoughts of the entire (PID) cultural group, irrespective of member gender. Although the conversation involved one category only of the possible four (people) member categorisations (as defined in the MCD), this was considered valid under the circumstances as it was the 'social order' of this particular group (PID) which was being studied and a perceived consistency of individual values was established through the group observation sessions completed previously.

### **6.9.2 Membership Categorisation**

The analysis indicated how the participants in the focus group interview made use of the resources of membership categorisation in order to link the categories and attributes and to explain "the courses of social action that are implied" (Baker, 1997: 142). A full copy of the Focus Group Interview Transcript is included as Appendix 6.4. The formal MCD utilised in the analysis and an extended discussion in relation to how the focus group interview contributed to the overall interpretation of the PID component of the NetWorkPlace™ study are included in the appendices to this thesis (refer Appendix 6.5 and Appendix 6.6).

### **6.9.3 Signs of Cultural Unity**

Throughout the focus group session, there was a reinforcement of the sense of mutual respect between members which was apparent in the earlier meeting interaction (and the subject of the Observation Analysis, refer Section 6.7). There was in general, equal contribution from all participants and although different information was conveyed in the utterances, there was a sense of a collaborative building process going on. The focus group interview clearly indicated a sense of cultural unity existed within the PID workplace (refer also to Appendix 6.6 for an extended elaboration of the analysis undertaken).

## **6.10.0 Linkage to Theory and Praxis**

### **6.10.1 Demystifying the 'Case Within'**

Within the realm of the local context, empirical data collected during the PID workplace investigation provided revelations which complemented the 'Network

Dimension' findings through the various analytical techniques employed. But what is the significance of the findings relative to what we know about the world and how it operates? Reference to accepted sociological and architectural theory and praxis was utilised to assist in better understanding and elaborating the implications of the PID component of the NetWorkPlace™ study.

This was an important aspect of the abductive strategy, designed to move in a logical manner from specific observations through to the formation of propositions via a probabilistic reasoning process. Due to the inability of the qualitative approach to provide demonstratable, conclusive cause and effect relations in the human behaviors displayed throughout the PID study, the theory or statements of probability arising in this discussion have been based on an abductively driven logic of association, underpinned by established theoretical alignments.

### **6.10.2 The Moral Basis**

Randall Collins (1988) wrote of the Durkheimian tradition in sociological theory suggesting that reduced to it's most important elements, social reality is at it's core a moral reality. This implies that moral sentiments are produced and shaped into social actions through a mechanism proposed by Durkheim (in his great last work of 1912, the *Elementary Forms of the Religious Life*, cited by Collins, 1988), which he termed as 'ritual'. Goffman (1967) contributed to this theory by including the taken-for-granted ritual in modern everyday life which he called 'interaction rituals', the consequences of which he suggested, shape the subsequent behaviour, thought, and feelings of those involved.

The inference which can be drawn from all of Goffman's work is that the entire structure of society, both work and private, is upheld by rituals and that these are socially enacted through rituals on frontstages, supported by backstages. Williams' (1988) interpretation of the nature of Goffman's (1959) 'interaction order' is that it refers both to the 'moral' character of interaction and to the 'standardised' character of interaction. The view taken by Williams (1988: 67) is that "social life is organized on the principle that an individual who possesses certain social characteristics has a moral right to expect that others will treat him/her in an appropriate way. In return, any individual who claims to have certain characteristics ought, in fact, to be what he/she claims."



“Whatever the content of the ritual, arbitrary though it may have been initially, it becomes a symbol of the experience in which it originated. It carries a charge of emotional energy and a sense of the interpenetrating consciousness that was manifested in the mutually aware focus of attention during the ritual. The physical and mental world, in short, becomes populated with objects that symbolize society. Internalized and carried around in the minds of individuals, these symbols become the steering mechanisms by which people recognize co-members. By means of these symbols people feel where to gravitate for support, where are the centres of power they must respect. On the negative side, they recognize the boundaries of their groups by the lack of respect for their own sacred symbols; and they feel the impulse to punish deviants within their groups who demean them symbolically.”

(Collins, 1988: 45)

Viewed in terms of the above, the PID component of the NetWorkPlace™ study began to be able to be demystified by examining the most apparent aspects uncovered through the empirical data:

- ❑ the rigid, structural order of the formal organisation **[C]**,
- ❑ the formal methods utilised to maintain control of the order, and
- ❑ the symbolism provided by the spatial environment as a mechanism for people to recognise or relate to co-members of ‘like’ groups.

A way to begin to construct meaning from the PID case was achieved through Goffman’s (1961) *Encounters* in which he discussed the classic concept of ‘role theory’ as it evolved from the social-anthropological tradition. Here, role is viewed as consisting of “the activity the incumbent would engage in were he to act solely in terms of the normative demands upon someone in his position. Role in this normative sense is to be distinguished from role performance or role enactment, which is the actual conduct of a particular individual while on duty in his position” (Goffman, 1961: 75). As illustrated in this case study, role enactment occurred largely through a cycle of face-to-face social situations with relevant others. When considered together, these could be defined as a role-set.

Many philosophers and social commentators over time have suggested that an individual’s defining position is portrayed as a matter of life chances. Bourdieu (1990) described this as ‘cultural capital’, the likelihood of undergoing certain experiences, trials, tribulations, and triumphs, and in this sense is somewhat akin to the concept of social ‘class’. A related concept is that of ‘status’ which is later introduced into this discussion as a key to explaining organisational behaviour. Goffman (1961: 82) explained that an individual’s position in some sphere of life, his ‘situation’ there, in the sense employed by existentialists: “is the image that he and others come to have of him; the pleasures and anxieties he is likely to experience;

the contingencies he meets in face to face interaction with others; the relationships he is likely to form; his probable alignment and stand on public issues; leading various kinds of persons in various connections to oppose him or support him. I include also the obligations and expectations that very often come to guide his action relative to specified others.” [Note: his/her; he/she; him/her are to be presumed as interchangeable in the foregoing.]

In evaluating the observations made and responses given by members in relation to role-sets as revealed through the PID investigation, distinctions were made between typical role, the normative aspects of role, and a particular individual’s actual role performance. Additionally, in analysing the study data, it was essential to remain cognisant of the bigger picture, that is, the social establishment in which the social occasion was acted out.

Lemert and Branaman (1997) suggested a social establishment may be best studied from the point of view of impression management. This implies that within the confines of organisations, teams of performers cooperate to present to an audience their definition of the situation. Further to this, the rules of politeness and decorum required to maintain the moral order are presumed to be known and understood. Reference was also made to a division into back region, where the performance of a routine is prepared, and front region, where the performance is presented (Lemert & Branaman, 1997). This mirrors Goffman’s concept of front stage and back stage, the physical manifestation of which was seen in the PID office layout which provided for private, quiet work and public, project work. Among team members “we find that familiarity prevails, solidarity is likely to develop, and that secrets that could give the show away are shared and kept” (Goffman, 1959: 238).

### **6.10.3 The Accepted Rules**

The approach to research known as ‘Ethnomethods’ is characterised by the abandonment of the rule-governed model of society in favour of studies consisting of empirical social practices whereby order is produced by the activities of members. In the PID case study it was apparent that irrespective of whether the members staged similar individual performances or cooperative activity which fitted together into a whole, an emergent team impression arose. Goffman (1959: 85) claimed that in the study of impression management, “the team and the team-performance may well be the best units to take as the fundamental point of reference.” In his

discussion on dramaturgical loyalty he stated that “it is apparent that if a team is to sustain the line it has taken, the team-mates must act as if they have accepted certain moral obligations” (Goffman, 1959: 207). The ‘team performances’ which arose in the PID case gave clear impressions of the differences between what was termed the ‘innovative’ group and what may rightfully be referred to as the remainder of the ‘bureaucratic organisation’.

The characteristics of an idealised bureaucracy formulated by Weber refer to a common belief system subscribed to by members, that is, that all actions are carried out according to formal rules and regulations (Howard, 1985). Generally speaking, sociological studies of organisations have shown that they do not operate in a simplistic, rule governed manner and that the informal groups, spur-of-the-moment adjustments, and organisational politics ensure that this is the case. Collins (1992: xiii) stipulated that “ethnomethodological research in organizations has strengthened the point; ..... rules do not give their own grounds for when and how to apply themselves, and even when people are being most bureaucratic, they have a tacit understanding of how to go about it.” Hilbert (1992: 39) reinforced this opinion by stating that “ethnomethodological studies show us that morality cannot possibly be the same thing as rules. Put differently, when we look for rules in the context of stable and morally regulated behavior, we do not always find them.”

Hilbert (1992: 46) referred to Garfinkel’s concepts of indexicality and reflexivity as important elements in understanding “a sense of conformity and deviance contained in Durkheim’s work that was lost in Parsons’ rendition.....which assumes that rules are analytically capable of prescribing behavior. What is necessary for Parsons, beyond the mere existence of rules, is that societal members respect them and voluntarily conform to them.” Hilbert (1992: 59) reaffirmed that “the rules invoked, created, or interpreted by societal members cannot do the prescriptive work required by Parsonian functionalism.” These he explains, are cultural resources that are used by members in the construction of order, but they do not in themselves prescribe order. Durkheim’s sense of social order then can be seen as one which is both moral and factual. This Durkheimian principle, termed by Hilbert (1992: 46) as the “society-morality equivalence”, underpinned the ethnomethodological approach adopted in the PID component of the NetWorkPlace™ study wherein actors actively produced their world and the shared subjective orientations to it.

#### 6.10.4 Group Norms

It is appropriate that in any discussion comprising the notion of bureaucracy that reference to the concept of social control is also included. Such control is traditionally attempted by bureaucratic organisations through the imposition of formal structures, rules, and policies. A more subtle and implicit form of social control can be observed through the ways in which a society secures conformity of its norms. Social organisation is typified by the expectations for behavior shared by group members, providing the regularity for observed social actions which in turn are the product of shared norms, learned through socialisation into the same culture (McGee, 1975). One of the fundamental units in the consideration of any aspect of social life is that of the group. Groups form in response either to the ordinary requirements of daily living or to the institutional requirements of the society or organisation to which they belong.

Members become part of a social community and voluntarily accept the constraints of social control through internalisation of the norms of the groups with which they identify. Such groups are termed 'reference' groups and provide an example of how to gauge our own behavior. The behavioural literature suggests that essentially, two kinds of reference groups exist (McGee, 1975). The most important of these are what sociologists call 'primary groups' and are characterised by "relationships in which people sense intimate, personal knowledge and acceptance of one another and a sense of belonging together with others like themselves" (McGee, 1975: 79). After family, the next most influential primary group are called 'peer groups', typically characterised by what McGee (1975) defines as personalism or "we feeling".

The PID group, although part of a formal organisational structure, displayed the classic hallmarks of a "we feeling" peer group through their group enculturation. It is principally through primary groups and relationships that a society's culture and norms are transmitted to its members and this was certainly the situation in the case of the PID group. The other form of group to which almost everyone belongs and which acts as an important reference group is termed a 'secondary group'. These are typically larger than primary groups and relations in them are characterised as segmental rather than total. Characteristics of the two types of groups can be quite contrasting, particularly in an organisational context as was illustrated between the PID group and the larger organisation [C].

### 6.10.5 Status – The Power and the Gory!

Social status is a dimension of social organisation and has been defined as:

“A status is simply a position in society or in a group.....the status is the position afforded by group affiliation, group membership or group organization. It is ‘set’ in the structure of the group or of the society before a given individual comes along to occupy it. It is an item of culture. A role is the dynamic or the behavioral aspect of status. Statuses are occupied but roles are played. A role is the manner in which a given individual fulfills the obligations of a status and enjoys its privileges and prerogatives. A role is what an individual does in the status he occupies.....Both statuses and roles are dynamic elements in the life of a society. The former however, are cultural, the latter behavioral.”

(Bierstedt quoted in McGee, 1975: 101-102)

There is a clear distinction between status and role in an organisational context. This provided benchmarks against which observed behaviors and actions recorded in the PID case were analysed. "Statuses are what we are, the socially significant categories by which other people identify us and by which we identify ourselves. Roles reflect group memberships, statuses reflect identity characteristics. A role can be dropped or changed. A status cannot be changed or abandoned because it is attributed to an individual by others, and the individual cannot affect it" (McGee, 1975: 105). Status is important in a bureaucratic organisational context because it determines how that society defines its members and therefore, what is likely to happen and what level of benefit or power they are liable to covet.

Max Weber, the great sociological theorist on the phenomenon of bureaucracies, would argue that status has a great influence on one's chances in the institutional context. This is because such contexts reflect the structure of society, the way its social organisation is put together, and thus the probability of possible occurrences becoming a reality. The concept of status can be extended then as the basis of social stratification, thus influencing how members relate to one another. This was an important consideration in analysing the PID data due to the hierarchical differentiation inherent in the organisation. It was also valuable in providing insights to the relative treatments afforded others in the various group and organisational relationships. Consider for example, the concept of ‘enforced’ respect associated with the majority of managers of **[C]** due solely to hierarchical position or status, compared to ‘earned’ respect, which is more likely to be a consequence of role performance, as was voluntarily afforded to the PID Manager in this case.

Social class, as distinct from status, is a term often used to classify people according to the rewards and privileges they possess as a consequence of their financial standing in society. The work of Karl Marx has suggested that economic forces determine social reality and there is no denying the fact that in Marxian terms, social class is perhaps the most pervasive of all sociological variables. Except for an acknowledgement of the fact that social stratification by status often goes hand-in-hand with a monopolisation of material goods, and that one's social class often influences what social status is achieved (Gerth & Mills, 1970), the concept of social class is not pursued within the PID context. The 'trappings' of high status positions in the case of organisation [C] revealed by the PID investigation and also through the 'Network Dimension' analysis outlined in Chapter 5, adequately illustrate however the privileges associated with these positions. What became apparent through the NetWorkPlace™ study was the influence of social capital in both organisational and network contexts. This notion, expressed in Bourdieu's (1990) terms as cultural capital, is utilised as an explanatory concept in the later discussion chapter of this thesis (refer Chapter 7).

#### **6.10.6 Variance to Norms - Do as I Say / Not as I Do!**

Status, as embodied in this particular institutional hierarchy certainly defined where one 'sat' in the organisation [C], both physically and metaphorically. It not only influenced the amount of power and control which one wielded or could expect to, but it also seemed to determine how one's views of the sense of appropriate social or moral order were formulated. McGee's (1975) discussion on 'deviance as variance from norms' sets the basis for this argument and is paraphrased thus:

"In every society there are people and behaviors which are considered socially deviant because they vary in ways deemed undesirable from what the society defines as proper. Deviation, then, implicitly refers to a departure from ideal norms, from what 'ought to be'. Deviant behavior is activity which differs from what the norms prescribe or prohibit. People usually believe that there is 'something wrong' with people who violate popular standards, who do not do what they are supposed to do, who 'choose to defy' conventional norms. To define a behavior or an individual as deviant, then, is to make a moral judgment as well as an empirical one. It is necessary to judge that a norm has been violated and that it was wrong to violate it. In both ways the judgment reflects the normative structure of the society or the groups of which the judge is a member. One of the problems of understanding deviant behavior, at least in large, complex societies, is that the society is likely to have more than one set of norms for judging deviation."

(McGee, 1975: 201-202)

From the point of view of the majority of the management group in the larger organisation [C], the PID 'breaching exercise' was considered to constitute a form of deviant behavior in relation to organisational norms, rules, and policies. Adequate empirical evidence to justify this statement was revealed through the PID investigation. The degree to which deviation from organisational norms is adequate to be considered as 'deviant' behaviour, is in this case, as always, open to conjecture. However, the statements given and behaviors displayed by senior managers in the organisation, suggested more than minor disapproval with the actions of the PID group.

This was reinforced by the use of specific terminology exemplified by: 'deviation from the standard', contained in the institutional Space Planning Guidelines document which was intended to enforce conformance throughout the organisation in relation to the distribution of and configuration of office space. Further to this, deviance was considered by management as a 'failure' on their part to enforce social control and thus considered the PID exercise as a threat to their own on-going sense of social order.

McGee (1975: 202) also reported that "subcultures typically develop some norms of their own, which differ from those of the larger society. Thus, what is deviant by the norms of the larger society may be conforming by the norms of the subculture, and vice versa." If the PID group is rightfully considered as a subcultural group of the larger organisation, it is no surprise to learn then that a different set of norms and thus a different sense of social order resided within. From the perspective of and based on statements made by the senior hierarchical levels, the PID group was seen as having transgressed the amount of permissible variation from the standard mode of organisational behavior in relation to their office layout and by extension, their general mode of operation. However, from within the PID group, deviation from the organisational norm of [C] was seen merely as an 'alternate' (and socially acceptable) method of achieving a process solution. Given the cultural orientation of the PID group, using what they termed as 'innovation' was considered by them as an acceptable means of attaining the group's socially desired ends, that of a more appropriate, economic, and functional workspace.

The contradictory decisions and actions taken by senior executive managers in allocating and affording themselves 'luxurious private offices' in the high status locations adjacent to perimeter windows in contravention of their own Space Planning Guidelines (and at the same time precluding all others from enjoying this

benefit), was specifically highlighted by PID members in the focus group interview. Based on a similar argument, the PID group could not be criticised for interpreting this action as an abuse of power and 'deviant' behavior by management in its own right.

McGee (1975) suggested that generalised theories on deviance have given way to theories which more adequately 'fit' the observable facts. These explain the concept of deviance as applied in the PID case in the following ways:

1. There are circumstances in which the nature of the society itself can generate definite pressures upon individuals or social groups which lead them to nonconforming behavior; that is, there are circumstances in which nonconformity is a reasonable and entirely normal response to the demands of the society.
2. 'Deviation' is a characteristic of neither acts nor persons. It is a label which gets applied to some people as the result of a long social transaction.

These explanations are partially congruent with one another. "The first is offered by Robert K. Merton, a social anthropologist who attempts to answer the fundamental question: how does deviant behavior persist in the face of social disapproval? The second explanation, referred to as labeling theory, is offered by Howard S. Becker, a sociologist who attempts to explain how individuals come to be identified as deviants by the societies in which they live" (McGee, 1975: 206-207).

Becker's work supports the sociological perception that deviant behavior is the product of social interaction rather than an attribute of deviant persons themselves. Thus, labeling theory is considered as an appropriate explanation for the experience of the PID study in that the 'deviant' behavior transgressed the norms of the organisational groups, depending on where one was located within the hierarchy and dependent upon the enculturation of that group. This is a slightly different and much more subtle alignment with the concept of deviant behavior than the pathological form usually afforded prominence in sociological reporting, but no less applicable from a behavioral and theoretical perspective.

### **6.10.7 The Role of Space as a Symbol**

"Much human behavior.....must be analyzed in the light of social process. A great deal of what we regard as everyday reality is, in fact, a matter of social



consensus (agreement among the members of a society)” (McGee, 1975: 221). If we accept the proposition that humankind is one of the most ‘symbolic’ of animals, and that life is submerged in a world of symbols, then it logically follows that symbols help us relate to and give meaning to things in the world. In the case of the PID example, it was apparent that space and its attributes provided a very strong symbolic link to many aspects of organisational life. For the PID members it represented ‘who they were’ and ‘how they wished to be perceived’, in short, it was a reflection of their ‘group identity’. For the management levels of the larger organisation [C], it represented ‘status’, ‘power’, and a mechanism for ‘social control’. In this light, the foregoing discussion of deviant behavior illustrates the implications of that concept and how it relates as a viable explanation for the findings of the PID investigation.

### **6.10.8 Spatial Expressions of Culture and Process**

From the organisational management’s point of view, the PID space was seen as violating basic tenets of the hierarchical, operationally-focussed, dominant culture of [C], which supported horizontal equality and vertical differentiation through spatial status markers. In the PID workspace, private offices were not allocated. This appears to have threatened upper and middle management most by violating the entrenched system of status markers. The PID ‘breaching’ exercise appears to have stimulated strong and irrational offense from those who considered that their own cultural mores were being questioned or their power base subverted. The negative and predominantly emotional reactions were viewed by PID members as being disproportionate to any rational threat which this slight reorganisation of space might have posed to the balance of the larger organisation, particularly when weighed against the local benefits derived.

This investigation and analysis has revealed that the PID culture was different and considered by the majority in management level positions as being out of sync with the dominant culture of the organisation. Organisation [C] could most accurately be described as a large, industrial oriented corporation with a strong sense of tradition, rank, hierarchy, conformity, safety, control, and efficiency. PID was a small process innovation group which valued the future, mutual support, group consultation, diversity, experimentation, enablement, and learning.

It was important that in the detail of its execution, the PID workplace expressed its own culture and acted as a constant background affirmation and reminder of shared values. At the same time, because PID's mission was to sell its services and innovations in work processes to other internal divisions, it was important that the spatial expression of PID's values was not perceived to be in opposition to the larger organisation. Opposition was however experienced and did alienate many managers from the more traditionally oriented divisions which constituted the majority of PID's client base.

The members of PID placed a low value on markers of hierarchy and status. This was expressed symbolically in their workplace design through the absence of a private office for the Manager. This sacrifice by the PID Manager for the greater group benefit was viewed as more efficient utilisation than wasting space on what was perceived as a status marker. This strategy was in fact tied to a core organisational value of **[C]**, that of achieving efficiency. It does not appear however to have been strong enough to overcome the uneasiness expressed by the majority of other managers about the open-ness of the alternate style PID workspace. The clash in perceptions appears to have been manifested most vehemently at the level of ingrained culture, embedded in in the majority of managers' attitudes to the maintenance of status symbols at all costs.

Maxwell (1993) noted that a vast amount of literature on the adoption of innovations has shown that people usually will not adopt an innovation simply on the basis of awareness and understanding of it. For adoption or acceptance to occur, two key criteria must be met. "Firstly, the innovation must meet a perceived need, and secondly, the innovation must be compatible with the adopter's culture and special situation" (Maxwell, 1993: 109). PID's innovative workplace met these criteria based on its own perspective and needs, but from that of the organisational management members, failed on both counts.

### **6.11.0 The PID Experience**

The PID exercise was undertaken in an environment where pressure was being exerted by organisation **[C]** to reduce overall office space in an effort to cut operating expenses. The 'transient-territoriality' strategy implemented by PID, in which each worker was allocated a minimum amount of private space and the 'saved' space clustered into common shared areas accessible to all workers

provided the resolution for conflicting requirements in the PID office. The approach taken was to identify the group's work processes with their inherent associated patterns and to then match appropriate spatial configurations which facilitated these processes and were acceptable to the group's cultural orientation. The workplace design was 'effected' successfully in no small way by the design users being empowered to shape their environment for themselves. Mitchell (1993: 68) claimed that "no longer is designing seen as a unitary activity for the planning of objects; rather the new and varied definitions of design reflect the multiplicity of possible outcomes of the design process and, more importantly, the way in which users' experiences are accounted for in the process."

It appears that through their experience, the PID group unwittingly instigated within their own natural setting, what has become a fundamental shift in the approach to design, that is, a shift in focus from 'product' to one of 'process'. In the PID example, this was a natural extension of the member's everyday methods, an on-going creation of meaning within their own social reality. The ultimate outcome which is outlined following, highlighted however a major contrast between what is widely mooted in the literature and by practitioners alike as contemporary design thinking, against the ingrained attitudes, particularly at a management level, of the reality of space design and the implementation of workplace solutions in a typical hierarchical bureaucracy.

The PID experience can be explained partially by Grievies (2000) who related that the modern study of culture began with the application of functional analysis originally outlined by Emile Durkheim. For Durkheim, analysis of social life required the study of 'social facts'. In his *Rules of Sociological Method* written in 1938, he suggested that it was necessary to:

- 1 find the causes of social facts.
- 2 find the functions of social facts (that is, the part they play in establishing order).

Although Durkheim explained phenomena at the level of society, the study of organisations and specifically phenomena within institutional settings (such as has been illustrated by the PID investigation into the creation of workplace environments), has revealed the possibility of studying the precise characteristics that produce consensus or social solidarity within a specific context. These include the symbols, ceremonies, and spaces which reinforce a cohesive group. The sociological development of functional analysis was taken further by Robert Merton

who argued that not all practices were functional for the entire cultural system. He pointed out that it was important to recognise that certain activities may be functional for some members but not necessarily for others (Grieves, 2000).

Through an analysis of spatial issues and the workplace environment in both a network context and a local setting, the PID investigation thus complements the findings of the network analysis by reinforcing the discoveries within the complex phenomena confronting design researchers and professional practitioners. It is apparent that there is still much to be understood by architects and interior designers, signalling that the ever-expanding contexts with which we must deal are liable to present even greater difficulty in our role as facilitators of built environments to meet the new demands of the knowledge economy and the network society.

### **6.11.1 The Rise and Demise of the PID Workplace**

The PID workspace survived for a period of approximately three years from the time that the original planning commenced. Throughout that time, it was reported by the previous manager, that the workplace concept supported a happy and efficient workforce. What was originally termed by the PID group themselves as the 'Alpha Site' experiment appears to have been successful when measured against the needs and expectations of its inhabitants and a large number of 'foreign' visitors to the site. A small number (less than ten) of managers from within the larger organisation were reported to have taken a "*lot of interest*" in the way the innovative physical environment enabled the work practices of the employees and appeared to support an uninhibited, socially interactive environment. Consequently, some of them verbally questioned the validity and effectiveness of the standardised office arrangements enforced by the organisation's Space Planning Guidelines (SPG). The majority of other managers remained opposed to the open, flexible concept on the basis of, as one was quoted as saying, "*a matter of principle*". The perceived threat that the PID workplace arrangement seemed to pose in terms of dispensing with both the physical and symbolic barriers of hierarchy and status, can only be presumed to have been too much for the greater 'organisation' to contend with.

Towards the end of 2003, the manager of PID was transferred to another organisational division to 'take up higher duties'. Over the following six month period each of the remaining PID members were also assigned to other divisions. The official line was that this was the result of a re-structuring process enabling the

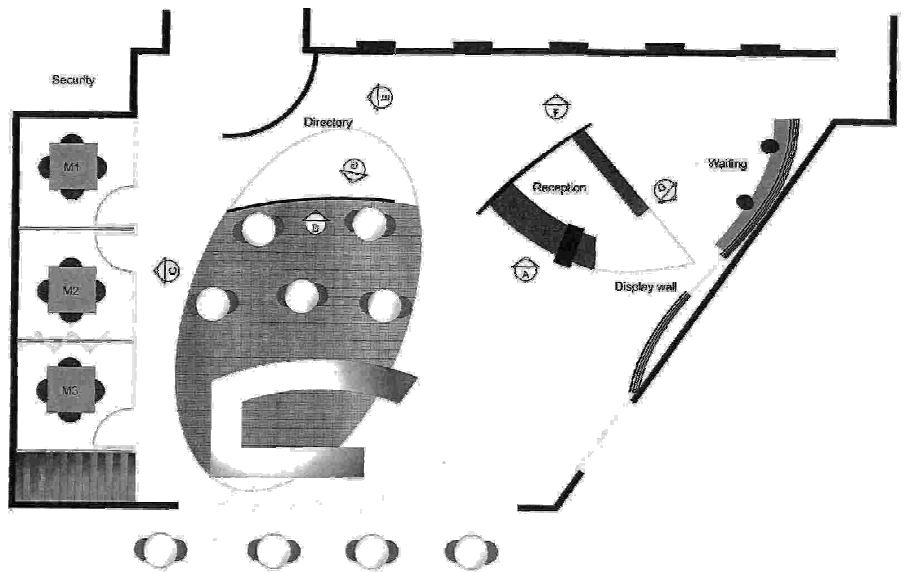
services provided by PID to be de-centralised, thus reducing the number of overall divisions within the organisation leading to a consequent reduction in overheads. In short, the reason provided was to cut costs. Given that each of the members was still employed by the same overall organisation, it is difficult to envisage what costs were being reduced, however no elaboration on this matter was forthcoming from senior management.

The physical space was reassigned to the organisation's 'Strategic Planning' division and immediately re-configured and fitted-out with a private office and lockable meeting room for the manager. The remainder of the open area was 'cellular-ised' in the traditional 'Dilbert' style and in strict compliance with the standard Space Planning Guideline (SPG) requirements. An interesting aside to the process is that the area previously accommodating fourteen (14) members, subsequently accommodated nine (9) 'strategic thinkers' responsible for guiding the organisation's future. Eight (8) of the original PID members resigned from the organisation within six months of being 'redeployed' to other locations.

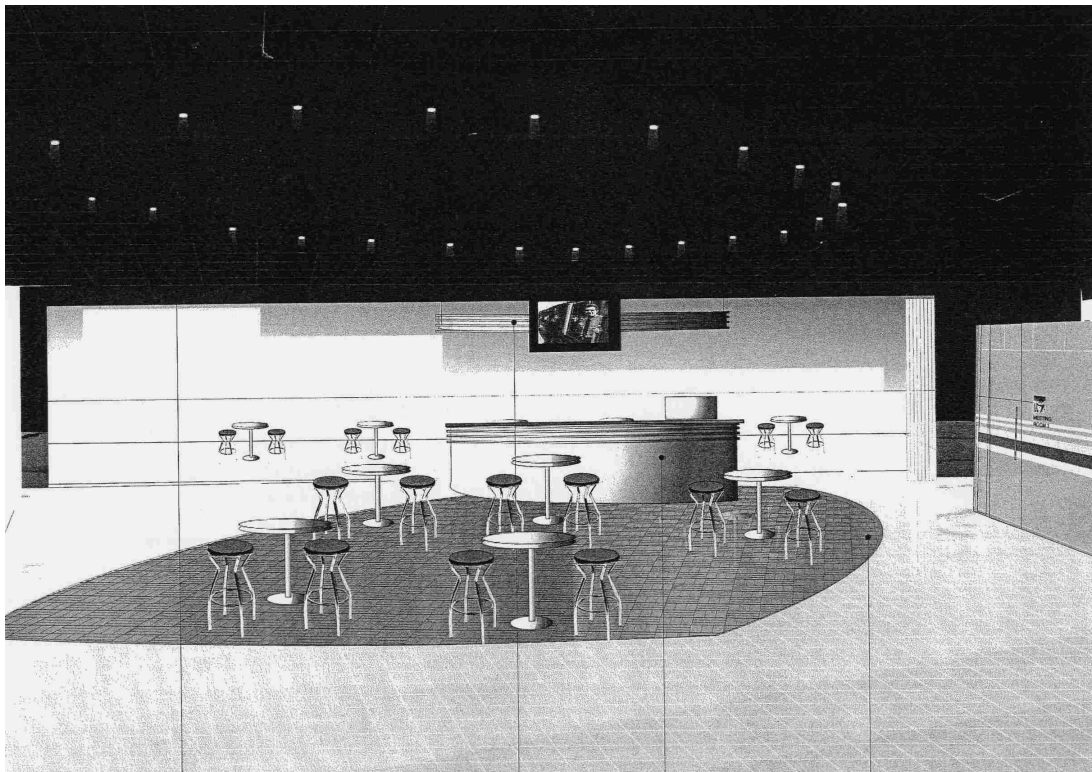
### **6.11.2 The Aftermath**

Although the PID experiment survived for only a short time in terms of the organisation's life-span, there appears to have been some measure of a positive legacy left behind. As a result of a re-consideration of organisation [C]'s overall business direction and associated relationships, in combination with the outcomes of the SCOP project and the NetWorkPlace™ study, the senior executive management group began to re-think the organisation's spatial accommodation strategies. Amongst a number of other related issues covered in the NetWorkPlace™ study, attention has been focused on the need to create and support interactive network relations with many of its external commercial partners and internally within the organisation, and to provide an environment which will encourage innovation within the ranks of its own employees.

In the interim period prior to any major spatial strategies being definitively formulated and physically implemented, plans are well under way to transform parts of the existing head-office building into a more user-friendly, socially interactive environment. The current over-scrutinised, security intensive, and unwelcoming main lobby space has been redesigned to incorporate a café area with easily accessible meeting rooms available at ground level (refer Fig. 6.15 and Fig. 6.16).



**Fig. 6.15 Ground Floor Lobby transformed into Café and Meeting Area**  
 Reproduced by permission – SCOP



**Fig. 6.16 Proposed Ground Floor Lobby - Café Design Concept**  
 Reproduced by permission – SCOP

Policies are being formulated by management to enable members to utilise this 'place' as a legitimate work area for interactional purposes. This initiative addresses in part issues related to the 'space of place' revealed through the NetWorkPlace™ study and also the associated management practices required to support space utilisation.

In terms of the 'space of flows', the organisation's information technology (IT) division is investigating ways that technology can be utilised for more innovative applications and implemented to encourage relationship enhancing interaction. A suggestion currently being evaluated is the incorporation of full-scale interactive screen walls at various network locations which will enable people in different 'places' to either interact in real time or simply feel a part of 'other places' in the network, thus building a consciousness and a connection between members.

This concept is not new in the grand scheme of things as similar innovations have been successfully trialled in a university learning environment at MIT (Mitchell, 2003). It is however innovative for the organisations and members of this, and it is safe to assume, many other social and business networks.

Mitchell (2004) referred to this as electronically welding spaces together. He claimed that having full-scale images displayed constantly in a social gathering environment, holds groups together informally in much more effective ways than the preceding, small scale formal video-conferencing arrangements did. It is a technologically enabled way of entering or becoming part of other domains without being there physically and acknowledges the importance of social presence as a way for members to gain a 'sense of connection' to others across the network.

### **6.11.3 The Future Strategic Direction**

A commercial in confidence strategy report prepared by organisation [C] in July 2005 entitled "*Strategic Accommodation Review: Generating Commercial Success and Cultural Change Through Relocation*" (SAR, 2005), provides some indication that workplace design and location issues are beginning to be seen as important commercial and culture forming influences. The content and terminology contained in the report raises some concerns however about how, under the current conditions of engagement between managers and designers, these can ever be adequately realised.

The Senior Management group has strong consensus support for the formal evaluation of a change to new premises for organisation [C]'s head-office accommodation needs. A key driver of this consensus view is the perceived limitations of the existing facilities to provide adequate operational space across all business units that will support the objectives of growing the business, reducing costs, and building on current capabilities. The current accommodation limitations are perceived to be exacerbated by poor image which can impact on branding and a belief that it does not adequately support efficient staff communication and interaction.

In order to develop its future industry positioning, the management of [C] has cited a preference for head office accommodation which not only supports a commercial focus but also helps to facilitate, promote, and reinforce aspects of culture that the organisation wants to change; i.e. improved communication, provides a people focused layout so as to encourage a flexible, agile workforce, and which delivers a strong professional image in the wider community particularly to customers and partner organisations. Key business drivers identified as being critical to future success and which the organisation wants to promote and be reinforced by improved accommodation are summarised as:

- ❑ Commercially adept & strongly competitive
- ❑ Agile, lean and flexible
- ❑ Dynamic, knowledgeable and skilful
- ❑ Open, visible, transparent & collaborative
- ❑ Environmentally friendly and energy efficient

The 'Architectural Statement' provided in the report (SAR, 2005) to underpin the new accommodation initiative states as follows:

Architectural ideas have the ability to reinforce and support corporate ideals. This has been proven in the articulation of corporate culture and the translation of corporate ideas into practice. Spaces dedicated to specific work functions conveniently located with casual and interactive meeting spaces engender creative high performance attitudes and a sense of belonging and being part of the whole. A clear logical grouping of common areas, meeting rooms, quiet rooms, cafes and sun gardens all contribute to realising the desired corporate culture. The selected site must have the ability to accommodate buildings and places that will significantly influence corporate change and provide contemporary work environments that are flexible and that allow for future change in all aspects of business. The accommodation model assumes the adoption of environmentally sustainable design principles as core design generators.

(Strategic Accommodation Review, 2005)



The Critical Success Factors required from the organisation's future accommodation to support its strategic business needs have been identified as listed below (refer Table 6.1):

**Table 6.1 Critical Success Factors Through Accommodation Strategy**

Factor	Rationale
Asset	Dynamic, professional property assets which reflect the future needs of the organisation. These assets are not necessarily expected to be owned but may be leased premises.
Culture	A dynamic commercially focused organisation, where staff can interact and engage access to stakeholders in a way that encourages and allows them to perform their duties in a professional manner, to provide engaging customer service (both internal and external) and do so in full support of the organisation's stated values and behaviours.
Communication	Open communication with access to improved physical meeting space and information and communication technology infrastructure, and generates a 'friendliness and welcoming image' via accommodation to stakeholders.
Financial	An accommodation which uses financial resources astutely in line with the desired commercial attributes of the organisation.
Buildings	People focused low level/large footprint style buildings with proximity and/or access to the CBD and other key infrastructure; i.e. services and social amenities. A strong focus on a layout which encourages and supports 'cultural change' is vital.
Identity	Accommodation which reflects a dynamic professional organisation focussed on providing commercial outcomes through its people with a brand which has improved affinity with stakeholders.

Typical images depicting recently completed Australian projects (refer Fig 6.17) which have been provided in the report (SAR, 2005) to accompany the 'architectural statement' are intended to convey physical metaphors which emphasise interaction, connection, and transparency.



**Fig. 6.17 Physical Metaphors of Accommodation Strategy**  
Reproduced by permission – SCOP

The various options for relocation considered to date include:

- ❑ Refurbishment of existing building stock.
- ❑ Construction of a new building within the CBD.
- ❑ Construction of a conglomerate of smaller buildings in a location adjacent to the CBD.
- ❑ Leasing of space in a new or existing building in or adjacent to the CBD.

Current indications are that the Board and senior management levels of [C] favour an accommodation strategy which follows a 'distributed model' of building stock as the most appropriate. As distinct from a 'centralised model' where one main building would provide the accommodation needs for all head office requirements, the 'distributed model' is comprised of a collection of smaller buildings tailored to the various operational needs of the organisation, and located according to 'business relationship' criteria.

It is thought that the 'distributed model' will build interaction between network members and provide space for key relationship partners to be involved in each others business. It is also a model which appeals to many operational staff who have come to accept that being out of sight means being out of mind (eg the quote: "*we have an amount of control over our own work and workplace because they [management] don't really know what we do or how we do it*").

Clearly the command and control mindset of the traditional hierarchical approach which is symbolised by the single building concept, is not appropriate to face the challenges of the network context. To date however, strong linkages to overall organisational objectives, anticipated network demands, and behavioural requirements have not been conclusively established.

#### **6.11.4 The Problem of Translation Between Disciplines**

Data which was acquired from organisation [C] in relation to the criteria being discussed in order to guide the formulation of a new workplace infrastructure strategy, raises concerns about the capacity of organisational managers to clearly articulate their 'strategic requirements' and the collateral capacity of architects and interior designers to translate such requirements into physical forms.

Relevant aspects of such data are included (refer Tables 6.1; 6.2; and 6.3) to serve as exemplars in support of the argument proposed herein and to help establish a case for closer collaboration between disciplines and professionals in the creation of appropriate workplace environments.

The data referred to above encompasses the 'Critical Success Factors', the 'Desired Characteristics', and the 'Key Objectives' contained in the Strategic Accommodation Review (2005) report prepared as a critical component for implementation of the future head-office facilities of organisation [C]. The report claims that a relocation of the corporate headquarters would ensure the creation of a work environment that achieves specific characteristics (refer Table 6.2) and addresses key corporate objectives (refer Table 6.3):

The purpose of this discussion has been to establish an overall position based on the NetWorkPlace™ investigation and the data revealed, in order to formulate a justifiable proposition in anticipation of advancing the workplace design process in the network context.

Accordingly, individual items and issues presented in the foregoing will not be commented upon in any further detail beyond that included in the tables referred to. What is abundantly clear from the examples however is the enormous gap between the precise messages encapsulated in the management 'speak' with its multitude of objectives, and a complementary architectural 'language' which can adequately translate such management principals and requirements into appropriate physical places.

The S.A.R. (2005) provides some hope that there is a desire to move forward in relation to office accommodation issues in the context investigated, but the report content is convoluted and disjointed with no 'understandable' (at least to designers and laypersons alike) strategies having been clearly articulated.

**Table 6.2 Desired Characteristics of Accommodation Facilities**

Desired Characteristics	
1.	Reflects concern for customers.
2.	Provides easy access to facilities.
3.	Mirrors the brand and image of a commercial customer and stakeholder focused entity.
4.	Attracts and retains the best employees and satisfies shareholder objectives.
5.	Supports the cultural changes necessary to drive the organisation in a competitive environment.
6.	Encourages productivity, flexibility, and innovation.
7.	Utilises more friendly and less security obvious reception areas.
8.	Incorporates improved canteens and coffee shop/casual meeting areas on each floor for staff.
9.	Provides modern open floor plans with state-of-the-art wireless workstations.

**Table 6.3 Key Objectives of Accommodation Strategy**

Key Objectives	
<b>Marketing, Branding, Image, and Culture:</b>	
1.	Enable a re-invention of corporate culture to reflect the new strategic direction, branding and image.
2.	Represent a landmark in design that enhances reputation and image without being extravagant.
3.	Ensure proximity to major clients, shareholders and stakeholders.
4.	Reflect a new modern design.
<b>Productivity, Flexibility and Responsiveness:</b>	
1.	Maintain a central location.
2.	Satisfy space requirements for the next twenty years, with a long life loose-fit floor space.
3.	Allow location of Groups (if possible) to maximize horizontal movement rather than vertical.
4.	Ensure close access to overnight accommodation for regional staff and visiting partners.
5.	Minimise disruption to the existing business and staff productivity.
6.	Utilise environmentally sustainable development principles.
7.	Be energy efficient.
<b>Financial Benefit:</b>	
1.	Be cost competitive and financially beneficial in the long run.
2.	Consider the option of site ownership versus leasing of space.
3.	Optimise the development potential now and in the future.
<b>Interior Design:</b>	
1.	Meet best practice design, utilising open floor layouts to optimise space utilisation.
2.	Meet future developments in wireless computer technology and fits with the existing network.
3.	Improve time-savings through enhanced workplace design and communications capacity.
<b>Staff Needs:</b>	
1.	Enable enhanced staff amenity and self-esteem.
2.	Be convenient for travel for the majority of staff.
3.	Ensure access to CBD – retailing, entertainment and cultural activities.
4.	Provide crèche/childcare facilities.
5.	Maintain proximity to hotel accommodation for visiting staff.
<b>Stakeholders:</b>	
1.	Ensure alignment with broader stakeholder and shareholder plans.
2.	Create job opportunities.
3.	Enhance the image of Queensland as the Smart State.
4.	Contributes to the State's environmental ambitions.

The Board of organisation [C] has stated that it “*wants to create a new architecture of the mind by creating a new physical architecture*”. Such an organisational challenge is clearly not just an architectural design problem.

Simply changing the physical symbols whilst perpetuating a management regime which continues to operate within the same intellectual paradigm, is unlikely to achieve the stated objectives contained in the Strategic Accommodation Review previously referred to in this discussion. There is little likelihood of achieving any significant change unless the belief systems progress beyond a cultural norm which still places a high value on status symbols and hierarchically induced power relations.

### **6.12.0 Engaging with the Problem**

It is obvious from the data presented herein that designers must find more effective and comprehensive ways of discovery. It is postulated that a start in this direction may be provided by a widening of the discourse initiated, negotiated, and experienced by designers than has been the case in the past. A critical aspect of this suggestion is the engagement of audiences and collaboration with partners of a much broader trans-disciplinary nature.

The NetWorkPlace™ study seemingly has exposed a propensity by the management group to provide ‘solutions’ and all-encompassing ideals, rather than clearly defined strategies and concepts which can then be transformed into physical form through the architectural design process.

But equally, the design disciplines must to be able to show that they have the capacity to facilitate the conceptualisation of ideas and translate the associated spatial issues in this context. Managers and designers alike assume that their frameworks and language are understood, each by the other and therefore the responsibility to close the communication and knowledge gaps revealed through the research must be borne by both disciplines.

In concluding the analysis phases, the first of ten propositions is posited as a way of encapsulating the revelations of the NetWorkPlace™ study and its methodological approach to the context investigated. These are further articulated in the following chapters which comprise the general discussion component and the conclusion to this thesis.

**Proposition 1**

The challenges posed by the emergence of the network enterprise have exposed an urgent need for architectural design theory and processes to engage with management thinking and theory in ways which can be more appropriately transformed into practical physical outcomes.

Chapter 1 INTRODUCTION

Chapter 2 LITERATURE REVIEW

Chapter 3 METHODOLOGY

Chapter 4 CASE STUDY

Chapter 5 ANALYSIS – Network Dimension

Chapter 6 ANALYSIS – Local Dimension

**Chapter 7 THE DISCUSSION:  
Providing an Explanation.**

Chapter 8 CONCLUSION

## Chapter 7 THE DISCUSSION: Providing an Explanation.

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### 7.1.0 Introduction

In order to provide an explanation which responds to the primary research question, it is timely at this point in the development of the thesis to reflect upon the purpose of the NetWorkPlace™ investigation in relation to the design disciplines and its contribution to other fields of research and practice by reiterating the overall aims of the study. These are:

- to formulate an understanding of what everyday meaning is attributed by organisational members to the 'space of place' and the 'space of flows',
- to identify the synergies, tensions, and/or conflicts between the 'space of place' and the 'space of flows' in the context of being-at-work in a contemporary network enterprise and to establish the impacts and influences, and
- to establish what this understanding can contribute towards the theory and practice of architects, interior designers, and other disciplinary contributors who have an interest or involvement in this contemporary context.

By documenting the process and learnings which have emerged from the trans-disciplinary, collaborative study undertaken in this case to inform practice and to use as a platform and point of reference for future research, a robust explanation and outcome is achieved.

The social theory which underpins the analysis and explanation of the network phenomenon encountered in this case, acknowledges the objective/subjective duality raised in the early development of this thesis. The contemporary French philosopher, Pierre Bourdieu (1990a), attempted to overcome such duality through a reflexivity process which considered both perspectives. In line with the view that has been advocated throughout the NetWorkPlace™ study, Bourdieu argued that either perspective employed in isolation presents an impoverished view of social life. Subjectivism focuses on the lived experiences of actors. This is limiting in that such a view accepts the social world as self-evident and does not question the objective structures that make everyday lived experience possible. Bourdieu claimed that this can only lead to a reinforcement of the dominant systems in force.



Alternatively, objectivism sees regularities such as structures, rules, and systems occurring irrespective of individual consciousness, resulting in a social structure which exerts force over society outside of the influence of the individual. Objectivism ignores lived experiences which are both a condition and a product of social structuring processes. Bourdieu (1990a) argued that research must focus on both the generative as well as the situated, that is the objective and the subjective character of 'practice'. In order to achieve this aim he established a number of key concepts which model 'practice'. These concepts, outlined in the following section (refer Section 7.2.0), were fundamental to providing the framework within which the discussion of the empirical findings of the NetWorkPlace™ investigation was formulated.

The study's primary focus on members' perceptions of spatial relationships and the use of physical space relies also on being informed by an understanding of both formal and informal network interactions, together with the structures of the individual organisations and how they integrate to form the network enterprise. An interpretation of these broader issues was essential in establishing what role the relationships and interplays between the 'space of place' and the 'space of flows' contributed to the production of social order. Technological developments and the consequent re-definition of the notions of space since the formulation of Lyman and Scott's (1970) 'territorial' categories relating to *public, home, interactional, and body*, demanded an expansion of these categories to include the *virtual*, the space between, or as Castells (2000) defined it, the 'space of flows'.

The organisational literature generally and the supply chain management literature in particular, indicated that organisations (or economic units of all varieties) are now cooperating across traditional boundaries to gain competitive advantages. Castells' (2000) theory of the *network society* suggested that this has resulted in a power shift away from the traditional hierarchy to a system of horizontal coordination and communication, transcending organisational boundaries and bureaucracies. He (Castells, 2000) claimed that the resultant information transfers and knowledge transactions, not the traditional hierarchical structures, now embody the power dimensions within organisations.

This thesis examined both the explicit and implicit power relations and controls in this particular case, through an investigation of physical places and space relationships, the interactions between members, the information technology systems in place, and the formal structures and rules of the organisations

concerned. It gained insights into the construction and maintenance of social order by understanding whether, and if so how, the various deployments or utilisation of place and space:

- ❑ reinforced the dominant power relations,
- ❑ were used to create alternative power relations, and/or
- ❑ were manipulated to facilitate operations and interactions in spite of the controls or impediments inherent in the existing hierarchies.

This complexity highlighted the necessity for more than a single disciplinary view to be adopted in order to extract the often invisible issues buried within organisations, influencing the fundamental questions to be posed:

- ❑ who is included and who is excluded?
- ❑ what is the nature and degree of the influence of place/space; is it emancipatory or enslaving / enabling or disempowering / or both at the same time?
- ❑ how can place/space enable a restructuring of power relationships or does it simply reinforce existing power relationships?

The intention herein was not necessarily to answer these questions directly, but to provide an awareness of the multi-dimensional problem with which designers must engage in this context. Power then became an important medium through which to examine how traditional notions of the workplace and its requirements now need to be understood in the new fluid, network context.

This thesis, through the NetWorkPlace™ study has confirmed that within the organisational structures investigated, some members were more empowered (typically the management elite) and other members were less empowered or even totally disempowered (typically the operational staff), depending on their position in the hierarchy or the network. It has also shown that the extent of social networks and the depth of implicit knowledge contributed substantially to members' ability to moderate or even avoid impediments created by dysfunctional power dynamics.

An investigation of place and space relations in this case thus provided a vehicle for discourse in regard to both the traditional hierarchical and the network theories on power relationships to be pursued in an intra- and inter-organisational context.

## 7.2.0 The Philosophical Orientation

The objective of utilising a broad theoretical framework based on Bourdieu's philosophy was to explain in a legitimate and replicatable manner, the organisational structures and mechanisms together with the activities of the members within the network that were utilised to ensure the production of social order on a number of levels. This approach was grounded in Bourdieu's (1990) conception that robust theory comes from the realisation of practice, that is, by making explicit the power relations inscribed in the social reality of a particular social 'field'.

For Bourdieu (1990) a central issue of concern was 'practice', that is, the outcome of the dialectical relationship between how actors and agents construct their social reality and how institutional structure, in this case organisations, constrain or enable them. For the purpose of the NetWorkPlace™ study, this translated more directly into an examination of the power dynamics in relative terms, between the 'haves' and the 'have-nots' and led to the formulation of the notion of 'positioning' as a way of understanding conflict in this context.

Bourdieu suggested that the exercise, production, and reproduction of elite/class based power informs all practice but that practice is largely tacit and motivated by the actor's position within the class structure. One of Bourdieu's major concerns was with the "analysis of inequality and class distinction at a structural level rather than at an ideological level" (Lechte, 1994: 45). His social theory attempts to overcome the apparent duality between subjectivism and objectivism and forces one to consider both.

Accordingly, Bourdieu's concepts of *field*, *habitus*, *symbolic violence*, *cultural arbitrary*, and *cultural capital* were used to both locate and explain practice in the context presented by this study. A brief interpretation of each of these concepts formulated by Bourdieu (1990) is provided following (refer Table 7.1). Application of Bourdieu's key theoretical concepts to the NetWorkPlace™ study are then tabulated (refer Table 7.2) in order to inform the discussion regarding empowerment and disempowerment across the network through an understanding of 'position' and 'position-taking'. This approach takes a lead from that proposed by Kvasny and Truex (2000) whose research program adopted the notion that technology, or at least the access to it and knowledge pertaining to it, serves as a marker of class distinction.

**Table 7.1 Bourdieu's Theoretical Concepts**

Key Concepts	
<b>Field:</b>	The notion of social arenas within which individuals struggle to maximise social standing. This concept can be further defined as a competitive system of social relations functioning according to rules specified by dominant classes and within which struggles take place over the accumulation, investment, and conversion of power resources. (This is interpreted in this case to apply both to the bounded, material world of the network context, and also to a disciplinary or professional area defined by the possession of specific expertise.) A <i>field</i> thus defines the structure of the social setting in which the <i>habitus</i> operates.
<b>Habitus:</b>	The notion of an individual's disposition which guides practice and behaviour in daily life. It is a cognitive construct that arises or is generative from personal experience and history. Elements of the <i>habitus</i> are acquired from the social class and status into which one is born (or in the case of an organisation, is endowed), and is both an individual and a shared concept. Whilst it is durable, it is also malleable and is in constant negotiation with the <i>field</i> . "Bourdieu has also said that <i>habitus</i> has to do with a 'sense of one's place' which emerges through the process of differentiation in social space" (Lechte, 1994, 47).
<b>Symbolic Violence:</b>	This represents the power employed within the field to legitimate and reproduce the class hierarchy. <i>Symbolic violence</i> imposes upon the <i>habitus</i> conditions which produce durable, but changeable dispositions. The interplay of <i>symbolic violence</i> and the counter strategies employed by social actors provides the <i>habitus</i> with an on-going history of continually adjusting and self-perpetuating experiences. This generative <i>habitus</i> , coupled with the constraints, demands, and opportunities present in the <i>field</i> determines practice.
<b>Cultural Arbitrary:</b>	Behind all culture is power in the form of the <i>cultural arbitrary</i> , that is, standards put forth and managed by the privileged or ruling class. These standards explicitly and implicitly determine which capital or stakes are of value. Thus capital extends the concept of power to include material and symbolic resources. People are trained via the <i>cultural arbitrary</i> as to their 'place' in and what they may expect from society.
<b>Cultural Capital:</b>	The possession of experience and familiarity with a particular role, specific expertise, or specialist knowledge immediately forces those without such ownership into a relative position of deference. <i>Cultural capital</i> is gained through one's socialisation in a particular cultural context and strongly influences a person's social position. Possession of such capital can elevate one into a position of elitism or prestige, commanding respect from others irrespective of hierarchical title or label.
<b>Social Capital:</b>	The scope and depth of one's connections to or relationships with other people determines the extent of a person's <i>social capital</i> . This embodies aspects of the above concepts which combine to influence the nature of relationships. <i>Social capital</i> in Bourdieu's conception is often confined within groups that possess similar <i>cultural capital</i> although examples can be found in all levels of society where such restriction does not necessarily apply. The intensity of the relationship is however more than likely tempered somewhat by any perceived cultural or class differences.

**Table 7.2 Bourdieu’s Concepts related to ‘Practice’ (in this case)**

<b>Bourdieu’s Key Concepts</b>	<b>Application to the NetWorkPlace™ study</b>
<b>Field</b>	The network of cooperating organisations under investigation. This may also be applied to the area of expertise of particular stakeholders or participants in the workplace design process, i.e. the fields of design, information technology, and management.
<b>Habitus</b>	Expectations, aspirations, attitudes in relation to space/place and technology in this context, i.e. the disposition towards the use of space/place and technology which informs practice.
<b>Symbolic Violence</b>	The use of political (hierarchical) position to enforce power, limit access, and control interaction within the field through the ability to make decisions in regard to technology and space/place.
<b>Cultural Arbitrary</b>	The formal rules, regulations, and policies implemented to impose power, maintain control, and to establish organisational value sets.
<b>Cultural Capital</b>	The sum total of previous experience and knowledge within this specific context which could be used to advantage, whatever hierarchical position in the organisation or network is held.
<b>Social Capital</b>	The access to social relationships with others in the network who have similar expertise or knowledge.

Bourdieu’s theory of practice and social reproduction enabled an examination of the relationship between the categories identified in the NetWorkPlace™ study, that is, ‘structure’ and ‘social climate’ to be undertaken through the constructs and elements revealed by the intensive, field based research methodology employed. The research process thus:

1. Explored individual organisational groups and the resultant network structures that served to either empower or disempower groups and individuals through the allocation or utilisation of resources embodied in and conceptualised as the ‘space of place’ and the ‘space of flows’.
2. Identified elements of the structure which attempted to maintain the status quo within the various organisations together with aspects of the social climate that enabled adjustments to be made to the social order within the overall network.

This agenda led to a deeper understanding of the use of place and space in organisational life and how it was enacted through practice. This is made explicit by identifying how ‘power’ and/or ‘positioning’ contributed to either the limitation or

support of the organisations'/network's spatial resources which in turn facilitated the required or desired social interaction. Enabled by that knowledge, designers and managers will in the future be much better informed to balance the structural and social conflicts exposed through the investigation of the 'space of place' and the 'space of flows', in the new network context.

Based on the findings of the investigation and the subsequent reliance on Bourdieu's concepts and the notion of power as a central theme in the explanation thereof, it is acknowledged that other broader and more philosophical questions may be raised. The endless possibilities for extending the 'power' argument are recognised, however these are not addressed specifically in this research, the extent of which remained bounded by the original research question and the scope of the NetWorkPlace™ study described (refer Chapters 1 and 4). Aspects which relate to other possible questions were pursued during the course of the analysis where appropriate to assist in the explanation of the study's main focus. This remained an exploration of the 'space of place' and the 'space of flows', together with the associated implications in the network context.

“Although sometimes mistaken for specific routines of everyday life ..... *habitus* is in fact part of Bourdieu's theory of practice as the articulation of dispositions in social space. The space is also a social field in that the positions in it form a system of relations based on stakes (power) that are meaningful and desired by those occupying the positions in social space.”

(Lechte, 1994: 47)

What underlies Bourdieu's (1977) theoretical stance, was explained by Lechte (1994) as consisting firstly of 'primary experience' or the 'phenomenological' level which is the source of basic data about the familiar everyday world, and secondly, 'objectivist' knowledge. This knowledge is used to construct the objective relations which in turn structure 'practice' and representations of it. “Sociology treats as identical all biological individuals who, being the products of the same objective conditions, have the same *habitus*” (Bourdieu, 1999: 113). Though it would seem unlikely that any two members of the same social class would have had exactly the same experiences at precisely the same time, it is highly likely and most probable that all members of the one class would have been confronted with situations typical for members of that class. In terms of the NetWorkPlace™ study participants, this was a definitive issue in respect to the *habitus* of the various groups wherein the members of particular levels of management, or specific operational groups, or groups with a common disposition due to location, engaged in practice in ways peculiar to their respective group membership. Through the systematic choices

made between places, people, and events which are confronted in practice, it is the *habitus* that contains the solution to the paradox of objective structure and subjective meaning (Shusterman, 1999).

*Habitus* is referred to as a system of schemas for the production of particular practices, but it also serves to differentiate members of one class from another. That is, *habitus* is generative of a set of dispositions common to a particular class. Lechte (1994: 45) claimed that “the dominant class in capitalist society is, statistically, the beneficiary of economic, social and symbolic power, power which is embodied in economic and cultural capital, and which is imbricated throughout society’s institutions and practices and reproduced by these very institutions and practices.”

### **7.3.0 Changes in the Power Dynamics**

The formal position held within an organisational structure or network hierarchy is an important source of power in that it provides access to people and information, amongst other resources. As Castells (2000) claimed and others in the communication field have suggested, information and knowledge are critical resources and potential sources of power. Members who are in key positions in the network are therefore critical players in the construction of social reality due to their role in and influence on the overall power dynamics through their control over information and/or how it is communicated.

Mintzberg (1983: 1) suggested that “power is a major factor, one that cannot be ignored by anyone interested in understanding how organisations work.” Bourdieu (2000: 104) claimed that “those in dominant positions operate essentially defensive strategies, designed to perpetuate the status quo by maintaining themselves and the principles on which their dominance is based.” The NetWorkPlace™ study clearly showed that for the management elite in this case at least, “the world is as it should be, since they are on top and clearly deserve to be there” (Bourdieu, 2000: 104). Raven (1993) suggested that people in lower positions naturally tend to behave defensively towards those in positions of higher legitimised power. Thus there tends to be conflicting forces between management and workers who default to their own group norms as a reference point.

Mutual participation in decision making processes, providing consensus is reached, has obvious advantages for the whole of an organisation and by extension, the

network. Such participation has been discussed since the early participative design ideas put forward by the pioneers of the socio-technical systems approach over half a century ago. This echoes the principals of the participative and human-centered approaches currently advocated by the design professions. The lack of reported implementations and empirical successes concerning this approach in the workplace design area raises the question however, of whether or not in an organisational or network context, it remains as just an ideological position. A possible explanation in the NetWorkPlace™ case may be that because of the differential power dynamics at work and the size and complexity of the network involved, the logistics associated with an ideal participative process are currently too difficult to implement in practice. It is postulated that a better understanding and a more equitable or egalitarian integration of the *cultural arbitrary* associated with the 'space of place' and the 'space of flows', may help to ease tensions within the social dynamics created by the power differentials in this network.

The laws of social dynamics are laws which can only be stated in terms of power (Keltner et al., 2003). Power is defined as an individual's relative capacity to modify others' states by providing or withholding resources or administering punishments from a position of dominance. Authority is power that derives from institutionalised roles or arrangements (Weber, 1947), but power can exist in the absence of formal roles (e.g. within informal groups). Status is the outcome of an evaluation of attributes that produces differences in respect and prominence, and by implication, power. Dominance, authority, and status are all potential indicators of levels and degrees of power.

Power is not static but interacts with contextual factors, culture, and individual difference variables (Chen et al., 2001). This recognises that an individual's power should be characterised not in absolute terms but as falling on a continuum relative to the power of others. Elevated power is associated with increased rewards and freedom, reduced power is associated with increased threat, punishment, and social constraint. Events or phenomena such as those experienced in the NetWorkPlace™ study and which are detailed as this discussion is developed, can have the effect of increasing existing power bases, threatening the legitimacy of those in power, or enhancing the legitimacy of the less powerful with the consequent tendency to destabilise the organisational hierarchies and thus the social order.

The literature tends to suggest that those 'in power' seek to maintain power and perpetuate their own advantage by reinforcing the existing organisational structure.



Thus a change in structure may necessitate a change in the distribution of power and vice versa. Burkhardt and Brass (1990) established that a change in technology may also produce changes in structure, power, or both. Based on the data collected, these issues appear to be the greatest obstacles for the NetWorkPlace™ study organisations to overcome before there is any possibility that the 'space of flows' can deliver the benefits suggested by the likes of Castells (2000) and before the 'space of place' can be capable of providing the types of supporting roles implied by Mitchell (2003).

Willer (2003) suggested that how power is extended vertically through hierarchies and horizontally through industrial networks and markets is a classic issue in sociology that was once extensively studied by Weber. Traditional organisational reward systems give executives and managers a strong incentive to aggressively protect their power bases (Cannella & Shen, 2001). Organisational theorists have long recognised and studied the exercise of power which extends through hierarchies but Willer (2003) claimed that his study of power-at-a-distance was the first attempt to theorise the exercise of power beyond dyadic relationships since Weber almost a century ago. The NetWorkPlace™ study contributes to the extension of this knowledge by considering not only power within organisations, but also the inter-dependent flows across organisational relationships characteristic of the network structure.

The remainder of this chapter is comprised of a discussion which isolates the aspects of and implications for place and space associated with the concept of 'power' which were revealed by the NetWorkPlace™ study data. This was achieved through a close scrutiny of both the structural (objective) and social (subjective) dimensions of *practice* experienced in this context. The discussion encompasses a comparison of the corporate governance regimes and the effects of the technology systems implemented, along with the consequent impacts on the social system. Implications for the 'space of place' and the 'space of flows' are then explained by introducing the concept of 'positioning' and by applying the notion of the person–environment relationship to this case.

Conclusions drawn throughout the discussion have resulted in the formulation of various theoretical propositions (refer Chapter 8, Table 8.4 for a complete list). These are intended to emphasise focal points in the argument, to provide directional cues for future workplace design practice, and platforms for extending research in the network context.

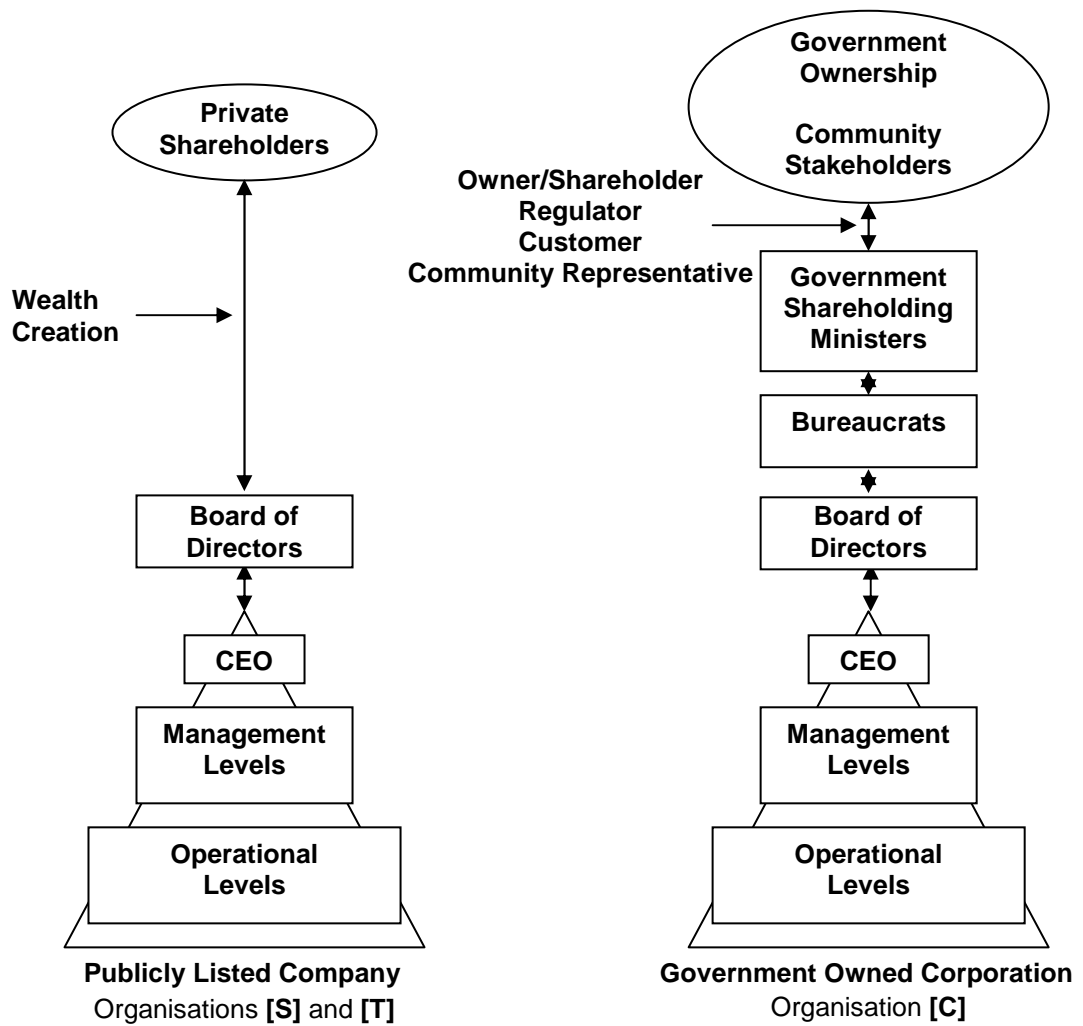
## 7.4.0 The Network Governance Structures

The striking difference between the supplier **[S]**, transport provider **[T]** and customer **[C]** which comprised the NetWorkPlace™ study participant organisations resulted from the manner in which they were, at the time of the investigation, formally constituted, and the fact that they were governed by different Acts of Parliament. The **[S]** and **[T]** organisations were publicly listed, private companies operating under legislation controlled by the Australian Investment and Securities Commission whilst **[C]**, (previously a State Government Department) was a GOC legislated by the Government Owned Corporations Act.

This resulted in the organisations being responsible to completely different 'masters'. The publicly listed companies were oriented towards taking a shareholder or what may be better described as a wealth maximisation perspective, whereas the GOC was responsible to a broader range of stakeholders and adopted an essentially political perspective. The illustration following (refer Fig. 7.1) helps to highlight the differences in governance formats and provides some insight into the structural difficulties faced by a network enterprise composed of an alliance between single organisations with fundamentally different purposes, motivations, and objectives.

In the diagram which contrasts the two organisational models (refer Fig. 7.1), it is evident that the GOC had a complex role relationship with government. This involved in effect, four roles, these being owner/shareholder, regulator, customer, and community representative. These roles were in conflict and in terms of the scope and types of decisions which could be made and the cycle times for major decision making processes, put **[C]** at a disadvantage compared to **[S]** and **[T]**.

There is a certain irony in finding that both **[S]** and **[T]**, which had a sharper focus around the single issue of shareholder wealth, operated under a governance structure which in fact better suited the intrinsic needs of staff for autonomy and ownership than the governance structure of **[C]** which took a stakeholder perspective. Customers also seemed to command far more attention from **[S]** and **[T]** who understood that shareholder wealth ultimately is derived from customers, whereas **[C]** seemed less clear about just who its customers were and as such was less clear on how best to serve such stakeholders.



**Fig. 7.1 Comparison of Governance Structures**

The competing orientations clearly impacted on how the different organisations in this supply chain identified and managed various business risks and subsequently the amount of ‘control’ built into their processes and operations generally. Flow-on effects included amongst others, how hierarchical power was distributed and exercised throughout the network.

The micro-economic reforms of the past couple of decades have affected all industries and organisations. In terms of this case, the transition of [C] from a government organisation to a GOC also brought about changes in accountabilities. The governance structure and requirements associated with a GOC indicate that Government has divested itself of the costs of being involved in particular industries, but at the same time maintained control.

It could be said that a neo-liberalist style of governance has dominated over the past twenty years, resulting in some clear trends. Governments seeking to reduce overheads and taxes use reforms such as outsourcing, privatisation, and corporatisation to generate desired outcomes. However, in doing this, governments have actually increased regulation and therefore the governance burden on organisations. It is probably too early, and certainly outside of the scope of this research to say just how effective such reforms have been in the case of public utilities but detailed analyses (Quiggin, 1996) have presented a less than flattering picture.

There is a clear implication however that the multi-layered governance structure such as that of the GOC stifles rather than enhances the ability of an organisation to be innovative in the way it provides products and services. This appears to be carried through to the way supporting mechanisms such as the physical workplace are established. It can be concluded that such a corporate structure is incompatible with the needs of a contemporary network operation.

It appears from the evidence of this study, that without significant realignment, traditional corporate governance structures are inappropriate for new ways of doing business in a network context. The main obstacles seem to relate to potential legislative differences creating integration asymmetry and interface incompatibility caused by a lack of disciplined protocols for sharing critical information.

Despite the significant difficulties caused by a vast difference in the governing rules and regulations, this case indicated that a network can function reasonably effectively regardless. This appears to be dependent however on a fully functional and cooperative social system underpinning the operations and leads to the positing of the following proposition as a result of the NetWorkPlace™ study.

**Proposition 2**

An effectively functioning social system appears to be capable of overcoming the structural incompatibilities and impediments attributed to competing corporate governance regimes in a network enterprise context.

### 7.4.1 Structural Constraints and Operational Realities

Conflict between two of the network allied partners over control of a key strategic asset, which is still currently being argued at the highest corporate levels in the organisations concerned, provides an excellent example of a situation where activities and interactions at the operational levels continues on regardless of constraints and difficulties at the management level. At the time of undertaking this study, there were issues pending in the Federal legal system between the customer organisation [C] and the transport provider [T]. The dispute relates to ownership and rights to operate a common terminal facility. Control of this asset has significant implications for the future expansion and growth strategies of both organisations. Due to the issue remaining presently unresolved, permission for direct contact with management of the transport provider at their headquarters in Sydney for the purposes of this study was not endorsed by the host project (customer) organisation.

From the research perspective, this situation did not present a major difficulty nor reduce the effectiveness or integrity of the data obtained. This was due to the fact that the main focus of the NetWorkPlace™ study concentrates on the interactions in the network and how these were supported or affected by the physical workplace. The structural components of the study required in relation to the transport provider were able to be sourced satisfactorily from alternative secondary sources. In terms of the operational reality [S], based in Adelaide, contracted with [T] directly to carry its product from the manufacturer based in Whyalla, to [C] based in Brisbane (refer Fig. 4.2). The interactional relationships at a management level at least, were therefore restricted to those between [C] and [S], and those between [S] and [T], independently of each other. It was critical to recognise however that operational level staff from [C] at the time of the investigation and apparently still, 'meet and greet' daily on an amicable basis with their operationally equivalent staff from [T]. The operational staff from [T] were able to be accessed for interview purposes during their daily ritual of visiting [C]'s 'turf' to check on scheduling and to exchange other pertinent information. This illustrated that irrespective of the contractual relationships and the presence of legal difficulties, the operational realities of the network meant that all three parties had to share critical information and rely upon each other to get their work done.

The above circumstances and finding suggested that different levels of organisations interact with each other in very different ways subject to the local issues and context. For example, it was revealed during general discussion with one of the interviewees, that a completely different division of the customer organisation had a contract with the transport provider organisation to carry freight interstate from Brisbane to Sydney. This was in effect a different supply chain involving a direct relationship between organisations [C] and [T]. In this context the relationship again seemed friendly and workable. This finding would suggest there are limits as to how much control governance can influence the day to day operations of the network, or at least when there are conflicting goals involving local responsibilities for which individuals are held accountable, that these will be given priority and ways will be found to 'overcome the system'. The detailed findings of this case study and the additional surface or anecdotal evidence gleaned during the research suggested that relationships can develop in productive ways despite structural barriers.

#### **7.4.2 The Paradox of Governance**

In view of the context and circumstances which this case study has brought to the fore, a question which needs to be asked is whether the 'control' and the 'collaboration' models of governance are mutually exclusive, or whether there are in fact ways in which the two are able to interact successfully. The supply chain literature (refer Chapter 2) is dominated by claims that cooperation between partners is a pre-requisite for success. By extension, it is logical to presume that such cooperation needs to be supported by organisations with governance structures with a propensity, or at least a capacity to collaborate. The reality it would seem however is that hierarchies and bureaucracies, which rely on a 'control' model of corporate governance, are still predominate in the business world and the NetWorkPlace™ study presents a case in point. It would be very optimistic to expect that many of the traditional bureaucratic structures will change significantly and in the face of increasing pressures, it would be more likely that controls become even more fiercely protected (Lewis & Kelemen, 2002).

"A control approach helps curb human limitations through vigilance and discipline, while a collaborative approach taps individuals' aspirations via cooperation and empowerment (Sundaramurthy & Lewis, 2003). From a paradoxical perspective, embracing both approaches can facilitate learning, promote diversity, and create

shared understandings (Lewis, 2000; Poole & Van de Van, 1989). As in the multi-paradigm approach, such acknowledgement enables thinking to include both/and rather than either/or, it becomes an 'inclusive' rather than an 'exclusive' framework.

The NetWorkPlace™ study indicates that there is a simultaneous need for both control and collaboration. The challenge is perhaps not to eliminate the tension between the two completely, but to develop understandings and workplace practices which enable the inherent tensions to be balanced and managed effectively. Such a concept has been investigated (Sundaramurthy & Lewis, 2003) and a framework proposed (Lewis, 2000) for exploring paradoxes within individual organisations, such as the coexistence of authority and democracy, discipline and empowerment, and efficiency and creativity. The network context raises a plethora of issues, suggesting that the possibilities which a paradoxical approach to governance may provide, warrants further intensive research well beyond the scope of this investigation.

The role of the NetWorkPlace™ study is seen as being one of making explicit the tensions created between the 'space of place' and the 'space of flows' and the associated issues of which these are symbolic, within the context investigated. Through appropriate implementation and better informed management of these critical network support mechanisms, revealed by the tools and techniques developed in the NetWorkPlace™ study, it is anticipated that inter-organisational partners will be better positioned to enable the 'social needs for physical places' and the 'technological capabilities for the supply of optimal information flows' to be met.

Trust between partners facilitates cooperation and collaboration. Tension on the other hand can undermine social ties and fuel distrust, but in moderation, it may also simply stimulate critical reflection and feedback. Balancing the interplay between trust and tension however requires an intimate understanding of these concepts in action and in the ways that the support mechanisms such as the design of the physical environment and the implementation of information technology and communication systems can contribute. The logical extension to this argument demands that for cooperation and collaboration across the network to be a possible outcome, cooperation and collaboration between those responsible for establishing the network infrastructure, including organisational managers, architects and interior designers, and information technology specialists is required.

**Proposition 3**

A trans-disciplinary, collaborative approach (such as has been modelled throughout this research) is an essential ingredient in the establishment of network structures and relationships in practice.

The emergence of network entities has amplified the challenges facing both traditional and contemporary governance structures. The NetWorkPlace™ study has helped to highlight the need for a dynamic balance to be achieved between the governance approaches of modern organisations. For alliance partners, this must encompass outcomes which do not privilege one approach above the other, but create an environment in which trust and the supporting mechanisms such as the physical workplace and technological innovations can contribute in a positive manner. Ways of building shared understandings within a paradoxical governance framework include the implementation of “cooperative, strategic decision making processes” across the network together with the promotion of “greater informal and formal interactions” (Sundaramurthy & Lewis, 2003: 409).

Trust is known to have a powerful self-perpetuating quality. The existence of trust in a relationship supports on-going trust. Distrust creates defensive behaviours and discourages open communication with one of the most common organisational responses being the imposition of more controls (Goold & Quinn, 1990; Davis et al., 1997). The increased use of controls results in an increasing reliance on such mechanisms, shifts voluntary compliance to compulsory compliance, and encourages more difficult to detect opportunistic behaviour (Ghoshal & Moran, 1996).

All of these characteristics are evident in the findings of the NetWorkPlace™ study and thus suggest the possible benefits of accepting and accommodating the paradoxical elements of the network system. A major challenge would seem to be balancing the functional co-existence of trust and distrust. This is claimed to be a pivotal component of high performing teams because team members learn not only when to trust others but also when to monitor others closely (Lewicki et al., 1998). Shared understandings help to promote trust as people learn to value the views of others (Pettigrew & Fenton, 2000).



What has become apparent through the NetWorkPlace™ study is that in such contexts it is critical to develop a common understanding of the issues involved and for all parties to be committed to common objectives for the effective and efficient functioning of the network enterprise. The creation of places and physical arrangements which enhance spatial relationships can provide significant contributions in both symbolic and functional terms.

**Proposition 4**

In order to achieve a position of mutual understanding, a common language and means of communication needs to be established so that the trans-disciplinary contributors to the development of the network are able to share knowledge and to engage in meaningful discourse.

## 7.5.0 The Influence of Technology

By applying Bourdieu's theoretical concepts to the investigation of 'practice' in the NetWorkPlace™ study, there is the capacity to help explain how the 'space of flows', through the burgeoning impacts of technology, together with the complementary roles provided by the 'space of place', support a new understanding of the network context in a way which informs workplace design.

"In general, organizational studies on information technology implementation and use assume the neutrality of technology and that the intention of those in power to bring the technology to a given social setting have honorable and non-malicious intentions. But typically someone, be it management or some class of users, is empowered while others lose power as new technology is deployed."

(Kvasny & Truex, 2000: 278)

The various predictions which have emerged in relation to technological change, particularly in organisational settings, have suggested that this will manifest in either one or all of the following ways (Kvasny & Truex, 2000):

1. communication technologies will shift power to the technocrats
2. the use of technologies will strengthen democratic features of organisations by providing the various groups of interest and practice with the necessary tools to respond to opposition
3. organisational elites will use their control over resources to influence the acquisition and application of technologies in ways which perpetuate their power bases.

The experience of the NetWorkPlace™ study indicated that all of the above were acting on the functioning of the network enterprise to varying degrees and that they had the potential to significantly shape eventual outcomes by being at the same time, both enabling and disempowering. However, technology like other forces acting on the network, cannot be considered in isolation.

Bourdieu's (1977; 1990) central issue of concern is that of 'practice' which for him, is the outcome of the dialectic relationship between how actors construct social reality and how formal structure constrains or enables. He views structure as enabling and reinforcing for the cultural 'haves', and limiting or disabling for the cultural 'have-nots' in society. For Bourdieu, cultural capital influences the class to which one belongs and he claims that the exercise and reproduction of class-based power informs all practice. Further to this, he asserts that 'practice' is tacitly derived and is motivated principally by the actor's position within the overall class structure.

### **7.5.1 Technology and Information Systems across the Network**

In an attempt to gain a holistic understanding of what meanings respondents attached to the concept of the 'space of flows', it was necessary to first define what constitutes the term in this case. In collaboration with the information technology specialists involved in the SCOP project, it was decided that the concept, as a minimum, embodied the technology systems and the information transfers across the network, thus capturing both the means by which the 'space of flows' is brought into existence and its purpose or intent as a communication channel.

In this way it was possible to discuss the topic with respondents using the language and terminology familiar to them and as used in their everyday practices. Thus it became possible to extract the relevant facts and issues relative to the 'space of flows' from the perspectives of the respondents themselves, by remaining within their zones of comfort and circles of knowledge. The research task became one of understanding their interpretations of living and working with the advances in technology which they were experiencing; a critical component of the changing face of the workplace. How technology was being implemented, and the issues and implications that it was raising, provided the clues to understand and account for the existence and the role of the 'space of flows'. In so doing, the relationship or interface with the 'space of place' helped to reveal the dualities and/or the parodies

inherent in the contextual fabric created by the ubiquitous connection of the network environment.

A large body of literature across a range of disciplines and specifically from the information technology and management areas, argues that modern advances in information technology has enabled the seamless flow of information across organisations and that this in turn has led to large performance improvements. By what measures and on whose terms however is largely undefined. It is further argued in many arenas that it is the advances in computer technologies which have enabled new organisational structures and network entities to become a reality. Reduced to the simplest logic, it is claimed that the ability to share real time information has meant that firms no longer need to be vertically integrated in order to maintain operational control, technology has made it possible to manage through networks by having access to information rather than by ownership. However, generally speaking, such claims appear to be based on research which is heavily oriented toward the hardware and software aspects of information technology (IT) rather than the social aspects of what and how people deal with information at large.

It has been adequately demonstrated (Davenport & Brooks, 2004), that although an almost endless supply of information is available to organisations through enterprise wide computer systems, management is yet to find an effective way to harness such information to achieve the competitive advantage which it is claimed almost universally in the supply chain management literature to be capable of. One reason provided is the lack of integration between organisational or network functions which was confirmed by the NetWorkPlace™ study, but more importantly and even less understood appears to be what people use information for and their reasons or rationalisations for such usage.

It was revealed through data made available in the course of the NetWorkPlace™ study that each of the three organisations under investigation had made relatively large investments in IT in recent times. The (host) customer organisation [C] had just completed a \$60m investment in their ERP (Enterprise Resource Planning) system through an upgrade to an already established SAP (Systems Application Protocol) software system (Songini, 2002). This was in anticipation of 'fixing up' a previous version of the software which suffered a distinct lack of acceptance by users. To the dismay of the software suppliers and of the senior management group who had approved the investment expenditure, the new version did little to improve user acceptance. A lack of adequate training and failure of people to have the

necessary computer literacy skills may have contributed to the outcome, however the NetWorkPlace™ study revealed a number of more deeply entrenched explanations.

Firstly, interview responses indicated a distinct lack of trust by a majority of staff from both the operational and management levels in the reliability and accuracy of the data contained in the computerised systems, best summed up by the response, “*no one trusts SAP*”. Secondly, the organisational wide performance management system (PMS) implemented by the Human Resources Division, was clearly at odds with the objectives of the computer based (SAP) system maintenance protocols. Managers were rewarded for quick response times in addressing unscheduled maintenance issues due to weather and other uncontrollable variables which were commonplace, particularly in regional areas. Hiding materials and inventory was seen as an effective and logical way of being prepared to meet such demands and thus local managers and supervisors had a strong incentive to hold “*grass stocks*”, a common terminology for ‘hidden inventory’ which was not recorded on the centralised SAP system.

Theoretically, having a central recording system clearly assists an organisation in monitoring and controlling its inventory levels, and at the same time openly communicates to all exactly what is available for use. In this case however, the ‘system’ disadvantaged local operators whose primary objective was a quick response time in an emergency. Thirdly, was the view expressed that SAP did not have the appropriate type of information nor enough flexibility or customisable features to meet requirements at the operational level. It was viewed by operators as a one-size-fits-all system which suited nobody exactly.

This led to the emergence of ‘feral systems’ being created to enable the recording and manipulation of data which was seen as being relevant and useful at the local level. Houghton and Kerr (2004) described a feral system as one that is created or constructed in an ad-hoc way as being part of the organisation but autonomous at the same time. Whilst almost all respondents appeared to lack faith in the SAP system, it was found that they expressed considerable faith in the social system as a way of getting the information needed. One supervisor was mentioned by other interviewees no fewer than 110 times and was seen as knowing what was “*really going on*” in the network. In fact 25 of the 32 respondents indicated that this particular person was a critical link in the chain and that if he disappeared, operations would be severely disabled.

interview transcript extract:

Interviewer: *How credible do you think that the people you deal with are in terms of the information and advice they give?*

Respondent: *Just use (name) as an example, (name) is at the top of the tree. Ahh without the information which (name) supplies, nothing can be done.*

identification code: 12RGO line no's: 150 - 153

All staff stated the need to have personal relationships with key players in the chain, especially in a crisis situation when it was particularly important to get the most up to date information in order to be able to recover as soon as possible. People were seen as far more capable and reliable sources than electronic systems in such situations.

interview transcript extract:

Interviewer: *How important are personal contacts with others in the supply chain?*

Respondent: *Very crucial, because that is how you make it work. When you have a supply chain that isn't running efficiently, the only way you can make it work at all is being able to pick up the phone and talk to key colleagues at the other end who can quickly get solutions from their end to make it happen.*

identification code: 3RMA line no's: 178 - 183

interview transcript extract:

Respondent: *I find people are trustworthy and highly reliable in terms of information ... much better than the computer systems. We have a meeting every morning at 7.30 and I discuss what happened in the previous 24 hours. So its daily that I communicate in some way shape or form with those people.*

identification code: 12SBJ line no's: 199-202

There was an overwhelming desire expressed by all respondents at the operational level to work through people rather than information systems. Most claimed that while much of the process knowledge was explicit and embedded in the SAP system, there was considerable tacit knowledge which was needed to solve day to day problems and this required ready accessibility "*by being connected*" to the social system. It appears as though much of the critical information which flowed through the social system was never expressed as an official record.

On the few occasions that this occurred, it seemed to have been recorded in one of the many 'feral systems' which could only be used and made sense of by those in a specific local context. Trust was also mentioned many times and seen as an important variable on two dimensions.

Firstly, in terms of credibility, it was essential to trust that the person knew what they were talking about and that the information they provided was factual. Secondly, that information could be shared with such people in a candid and forthright manner and with the confidence that it would not be misused against the provider or others

in the network. It was suggested by many that “*without such trust*”, the whole system of work would break down.

interview transcript extract:

Interviewer: *So you've talked about the social interaction between your two groups, was that less or more important than technology systems to get your work done?*

Respondent: *Besides the telephone, we only had a fax machine ... they were our lifeblood to the outside. Pretty funny when you hear all the rumours about how many millions they spend on computers and things in the main building in town. But we'd rather get our information right from the horses mouth than a machine anyhow, ain't that right boys? (directed to workmates). We had to drive twenty kilometres every Friday just to get emails from (location) ... they were always just crap anyway. We're definitely treated like the poor cousins here ... but if we stop ... the whole chain stops in both directions.*

identification code: 12RCG line no's: 232 - 242

interview transcript extract:

Interviewer: *Where do you get most of your information from?*

Respondent: *The corridor news. Maybe the boss coming and saying something but they are not always the first people to know about something. Its all the contacts you make, they hear of something, they ring us up. That is the informal live system, its alive and well.*

identification code: 12RMS line no's: 225 – 229

interview transcript extract:

Interviewer: *Would you comment on how geographical location of members across the chain impacts on their interaction and communication?*

Respondent: *A huge impact, um .... the extent that you can cover a given area, that makes you build a relationship, and it's always the overhearing something dimension, which is critically important in people making linkages. Serendipity maybe .... But I don't think really think it's serendipity ..... I think it's simply the way people work ..... um it's being close ... it's being close and ... and ... and then filtering systems. I mean they could be quite busily working and all the background conversations, but if a word comes through that filter, it probably means something. Yeah and they can connect .... they connect to it and act on it ..... so yeah! ... yeah.*

identification code: 4RMO line no's: 558 - 568

The need to gather critical information via social systems was not restricted to local settings, it was also evident in the inter-organisational context. Staff in all organisations spoke of “*the need to be able to get hold of someone they knew when they needed something done*”, especially when things went wrong so they could take the necessary action in a timely manner. There was some evidence that both managers and operational staff had visited each others' organisations at times in order to become familiar with the respective operations, and to meet people they perceived they had key interdependencies with. All who had participated in this type of activity reported that they found taking the time to meet such people and build relationships was immensely beneficial, and suggested that it should be a matter of course for everybody within the network who had some sort of interaction.

In contrast to this, the majority of management level respondents expressed a desire for access to a fully functional and reliable electronic information management system to enable them to keep up to date with operations and to help facilitate the enormous amount of reporting tasks required of their roles. Although at this level there was also acknowledgement of the value of having an accessible and reliable social network to call on.

interview transcript extract:

Interviewer: *Would you talk about communication in the supply chain?*

Respondent: *We are starting and I suppose it is never going to finish ... but we are starting really to understand what each others problems are. Um ... by visits and communication, proper communication, not trying to hold anything back.*

identification code: 12SBJ line no's: 70 - 73

interview transcript extract:

Respondent: *Well I suppose the guys communicate better now because of the familiarity with each other ..... and I suppose I gave them permission to get to know the guys who supply us and the guys who we supply ... I invited others to come over to our workplace and out of that ... our guys went to theirs ... and now we do really feel like we're part of the one team ..... which wasn't the case when we just talked to somebody on the phone or sent them a fax or email ... and we were supposed to be part of a big team just because management told us we were.*

identification code: 12RGO line no's: 48 - 54

interview transcript extract:

Interviewer: *How do you think peoples' location in the chain impacts on their interaction and communication?*

Respondent: *Dealing with different locations makes it sometimes more difficult to build the relationship ..... and to that extent you need time to put time aside to ensure that people can visit and talk to each other.*

identification code: 3RTD line no's: 395 - 399

Respondent: *I think some of the previous barriers that we had created by geography have been significantly eliminated or significantly reduced by technology ..... but there will always be the need for social interaction ..... for people to meet and build a relationship that gives them a level of trust. So they know who they're dealing with and they know whether or not they can rely on that person in a difficult situation or time.*

identification code: 3RTD line no's: 407 - 412

interview transcript extract:

Interviewer: *Do you use video-conferencing at all?*

Respondent: *No, no no. We haven't got that sort of technology down here. Even if we did, it's a bit impersonal ... face to face is the way to go.*

identification code: 12RGO line no's: 181 - 183

The fundamental message contained in Castells' (2000) concept of the 'space of flows' and the opportunities for information transfer which such a domain provides, is reflected at the micro-level in the Davenport and Brooks (2004) suggestion that ERP's such as SAP make cooperation across a supply chain easier.

Such claims are not challenged by this research, but the NetWorkPlace™ study indicated that the mere presence of the 'space of flows' and the imposition of a standardised technology system is not in and of itself enough to ensure that a network will operate efficiently, if in fact it will function at all.

interview transcript extract:

Interviewer: *So are you suggesting there is a mix of formal and informal communication?*

Respondent: *There are some formal communications which are by emails and by memos, and there is notices on notice boards, presentations at the team meetings, activities where the team gets together in small groups ..... but yeah, there are informal discussions ..... very frequent and very varied ..... you couldn't do without the informal communications, that's how you get the good oil ... and keep your network of contacts alive.*

identification code: 3SBP line no's: 300 - 307

interview transcript extract:

Interviewer: *What can you say about the role of relationships in the supply chain?*

Respondent: *You could have the best system in the world but if you haven't got the relationship and the relationship isn't working, then the piece of paper or system is worth nothing. You really have to have give and take in relationships I think.*

identification code: 4RAM line no's: 82 - 85

The clear and present evidence revealed through this case study strongly suggests that both structural and social variables have an impact on the make-up and functioning of a network enterprise.

### **Proposition 5**

Governance, technology, and social interaction supported by the design of the physical workplace constitute the most significant factors impacting on the network function and these factors are inter-dependent and inextricably entwined.

The rationale for the above proposition is that the governance component establishes the objective framework, technology is the means by which the 'space of flows' is enabled, and social interaction is the vehicle through which social order is constructed by people finding and establishing their 'place' in the network.

Of significance for the design disciplines is the fact that the physical environment has the capacity to play a major role in each of these factors. In terms of governance and structure the designed environment can communicate and reinforce corporate values through physical metaphors. This case study has shown a critical



need for the consideration of how technology interfaces with the physical environment. Further to these, the design of the physical environment is paramount in providing facilities for the opportunity to interact socially. The creation of 'places' for face-to-face interaction was consistently shown to be a highly desired commodity in the NetWorkPlace™<sup>©</sup> investigation.

## 7.5.2 Technology Dependency

The findings of the NetWorkPlace™<sup>©</sup> case study suggest that technology is a necessary, but when implemented in isolation, not a sufficiently enabling enough condition for enhancing network interaction and performance. Despite very large investments in technology, the anticipated benefits in terms of sharing information in standardised ways to enhance decision-making and reduce operating costs were not being realised. Technology can certainly speed up the flow and ease of information sharing however trust appears to be a major issue in respect to the use of technology.

Without trust and appropriate management strategies it seems unlikely that staff will engage with the technology in a manner which will provide benefits to either network operations or social interactions. The contextual factors around the network operations indicate that the centralised system is incapable of grasping and representing all that is occurring in such a complex and dynamic social environment.

Based on the power of the social system described in this case study, centralised ERP systems such as SAP appear to make oversimplified assumptions about the nature of information and how users interact with it. Evidenced by the proliferation of 'feral systems', the promises of what technology can do seem overstated and may well need to be severely moderated. The alternative may be to try moving beyond the dichotomous thinking of either a centralised or decentralised information system and realise that networks may need both. Such an approach would not only acknowledge that there are many voices and realities within a network, but that such diversity may also require a range of channels to transmit information.

interview transcript extract:

Respondent: *I had a go at restructuring this group but uh ... as a process rather than around divisional tribes and I couldn't uh ... I couldn't get the team around me to embrace the concept of process work teams ..... They wanted to stay with their communities of practice. .... Community of practice was still very powerful and kept inhibiting that process model.*

identification code: 3RSC

line no's: 596 - 606

The organisations involved in this network collaboration, whilst being defined as single corporate entities, actually operate even within their own boundaries as several separate businesses, with different sub-cultures and performance drivers. Social factors such as trust and collaboration were found to be strong precisely because members within the chain had learned to rely heavily upon each other. For a multitude of reasons, they expressed little faith in the formal information systems. These social arrangements persisted despite the greatly enhanced, but as yet under-utilised capability of the technology systems implemented.

interview transcript extract:

Interviewer: *Would you be more likely to put your confidence in people or systems?*

Respondent: *Ahh, people, yes definitely ... I've seen too many systems fail. I'm very confident in the people I deal with ... at the operational level that is.*

identification code: 12RGO line no's: 144 - 146

In the current climate of globalisation, the IT industry assumes in many cases a position of transcendent power, driven by the 'technocrats' with a determinist view of the world. Conventional technologies such as the telephone can already facilitate social interaction in real time, and probably much more personably than interacting with a computer screen. So how necessary is the new technology for development of the network? The major benefits of the new technology as currently implemented appear to be associated principally with the ability to record and track information much more efficiently and the capacity to facilitate asynchronous communication across time and space.

The utilisation of leading edge technology to communicate across the chain, at both the intra-organisational and inter-organisational levels would greatly enhance the ability to share vital information. This study has shown however the critical need to match technological systems to the needs and capabilities of the social system. This raises an issue of how people work in organisations and how this is extended to encompass the whole network. Of significant prominence in this context is the concept of virtual team-working, a topic which bears enough relevance to this study in terms of both space and place to warrant some exploration of the impact in this case.

### **7.5.3 Virtual Teams**

Virtual teams provide the mechanisms through which people located in different organisations or different parts of an organisation and who are separated in space and (possibly) time are able to work together. These extensions to the traditional

notion of team-working offer an important means of collaboration in supply chains and all conceivable forms of the network entity. Overall there were sufficient interdependences between respondents in this case study to consider the extent to which they actually worked as teams.

Interdependence between respondents was predominantly serial due to the sequential nature of the supply chain process, however there was also a high level of interdependence and interaction between members 'scattered' throughout the network. Those at the beginning of the chain also relied on those further along the process for timely orders and planning information and there were instances of the need for reverse workflows.

In so far as teamwork existed in the supply chain investigated, it appears to have evolved with little deliberate attempt to create formal team arrangements. Most respondents indicated that they felt part of their 'local' team but beyond that, without formalised identities, the teamwork label was all but non-existent.

However, interviews not only provided evidence of teamwork but also virtual teamwork active in the supply chain. All respondents reported that they communicated with each other most often via email, fax, and telephone, with varying use of local information systems.

Of significance to all respondents was the fact that "*face-to-face contact is important*" in their communication and they reported overwhelmingly a desire for more opportunities to interact in that way. Interaction between people certainly occurred but it was based principally on "*who you know*" and "*what you need to know*". The issue of a recognised or recognisable identity appears then to be a significant pre-requisite for inter-organisational or cross-functional teams in order to establish connection with other members, even if only for the benefit of informing the wider network community.

The most significant barrier to teamwork becoming more effective in the NetWorkPlace™ case may be the proliferation and fiercely protected divisional structures within the individual organisations themselves. This situation caused authority and responsibility to be assigned on the basis of hierarchy to different groups at different points in the supply chain.

interview transcript extract:

Interviewer: *Would you please comment on how location affects communication and interaction?*

Respondent: *I think there is a big danger if they limit communication to you know .....to electronic type communication rather than face-to-face ..... umm maybe (researcher 1 name) and (researcher 2 name) would shoot me down in flames, but face-to-face gets the best result every time ..... Face-to-face ... yeah, we like to eye ball the people who we are dealing with. Simple as that.*

identification code: 4RJW line no's: 332 - 347

Respondent: *The old face to face stuff, you can never beat it.*

identification code: 4RJW line no's: 385 - 387

interview transcript extract:

Interviewer: *Would you comment on how you think the physical work environment enhances or inhibits interaction and communication?*

Respondent: *Clearly you can build supply chains so large that it's physically impossible to actually co-locate. It makes no sense to co-locate because they're multiple companies. In some cases it might make sense to put the supplier or put someone into ... to each others office say as a support point, to learn about each other's business and to build relationships. Umm ... I think the issue is and the discussion should be around the interface point ... Mmm ... how to ... how to best lubricate the interface.*

identification code: 4RMO line no's: 570 - 578

It can be concluded that the NetWorkPlace™ study participants did work in teams and as virtual teams in important respects, even if such labels were not assigned to or adopted by the members themselves. The evidence in the case study would also suggest that as such, they faced many of the problems and issues that affect virtual teams generally.

Neither the structural nor social conditions provided met the minimum requirements necessary for teams to function effectively in an inter-organisational or cross-functional manner, whether they were virtual or non-virtual. Three broad issues illustrating this conclusion which emerged from the data in relation to interaction and the capacity for effective teamworking include:

- ❑ inappropriate organisational structures,
- ❑ inadequate opportunities and the physical facilities to support face-to-face interaction, and
- ❑ unsuitable integration of advanced technologies with both the network processes and the social environment.

#### **7.5.4 Teamwork in this Case**

Many of the issues besetting virtual teams (refer Chapter 2) were found to be relevant for various geographically disconnected members in the NetWorkPlace™

study. Several suggestions have been proposed in the literature about ways in which such problems and issues may be dealt with.

A range of examples are indicated following (refer Table 7.3) and have been included due to the fact that the design of the physical environment has the potential to contribute to each circumstance in a positive way.

**Table 7.3 Overcoming Problems with Virtual Team-Working**

<b>Issue</b>	<b>Method</b>
<b>Building Relationships</b>	The importance of face-to-face meetings is highlighted, particularly in the early stages of a team's life and for teams faced with on-going tasks that require a high degree of interdependence. Face-to-face meetings have been shown to facilitate strong relationships between team members, build trust, and minimise potential conflict (Fulton, 2002; Shockley-Zalabak, 2002).
<b>Performance</b>	Researchers suggest that any scheduled rhythm should be structured around the most difficult performance challenge facing the team and that rhythms must be consciously scheduled and managed rather than being allowed to emerge spontaneously (Snyder, 2003).
<b>Communication</b>	Studies indicate the importance of choosing appropriate communication media to fit the requirements of the task and the message. Rich media, such as face-to-face meetings or at the very least, conference calls, are necessary when a high level of interdependence is involved in the task or where the message is complex. Under less demanding conditions, a less rich medium such as e-mail is considered adequate. Computer supported collaborative work must consider both the benefits and limitations of electronic communication technologies (Kelley, 2001).
<b>Identity</b>	Temporal coordination and the establishment of group identities may help teams overcome problems of physical and cultural separation by establishing ground rules or group norms (Snyder, 2003).

The above suggestions to overcome the problems and limitations facing virtual teams reflect many of the issues raised by respondents throughout the research process including the repeated request for “*increased face-to-face interaction*”. O’Connor (2000) suggested that all teams require a shared purpose and goals, communication of both task and social issues, a sense of identity, trust, and a willingness to rely on fellow team members. They require autonomy to make decisions, control their work, and manage their relationships with each other. All of the foregoing have spatial implications and the potential to influence physical workplace arrangements.

The brief insight given into virtual team functioning highlights the fact that collaboration is problematic in inter-organisational relations and that many of the barriers to effective collaboration may be attributed to human and organisational management issues rather than technical ones (Jones & George, 1998). Despite the issues raised previously in regard to technology, it may well be that the problem does not lie with the technology and the systems per se, but that implementation of advanced information systems such as ERP and SAP may be much more successful in enhancing collaboration when based on a better understanding of both the social system and the organisational structure (Kahmann & Henze, 2002). This could then enable the physical design of settings and interfaces which provide more appropriate workplace solutions.

interview transcript extract:

Interviewer: *Would you comment on how you think physical environment enhances or inhibits interaction and communication in the workplace or between workplaces?*

Respondent: *I think it ... think it can ..... it largely enhances, but I think it can also inhibit in that sometimes people um, ah ..... that environment actually sort of almost imposes a structure ... therefore it inhibits thinking beyond that structure and cuts off free-form thinking.*

Interviewer: *What changes would you like to see made?*

Respondent: *Um, a range of changes I think would be valuable. One of them is that what we were just talking about ..... is that, is the, the, the ah, co-location .... or the, the opportunities for working together over longer periods of time to establish relationships ....and to establish that informal structure I suppose.*

identification code: 3RBB line no's: 700 - 710

interview transcript extract:

Respondent: *if I had my choice, I'd put the chain together, built around the social dimension .... The social dimension gives you all the interaction, the richness in interaction of personal contact ... which is why of course you should try and get your suppliers and your customers talking together face to face and you build some rapport, at the operating level particularly, but it needs to happen at all levels of the organisations involved.*

identification code: 4RMO line no's: 611 - 616

Face-to-face meetings did occur in the network studied although many respondents expressed a desire for more contact of this kind. Self generated ground rules and norms for reducing communication delays within the teams appear to have evolved and respondents relied heavily on email, fax, and telephone communication. Advanced information systems such as SAP are promoted as having great potential for communication and coordination in supply chains, but the system which operated in the NetWorkPlace™ case was used only to a limited extent.

Respondents tended to regard the centralised information system as useful for information storage but favoured direct personal communication for accomplishing

tasks, dealing with contingencies, and solving problems. There appears to be a long tradition within the organisations involved in this network, of users' acquiring or developing local information systems to meet their own particular needs. The reliance on both direct personal communication and local systems may reflect previous negative experience with centralised systems but this was not specifically divulged during the interviews.

The majority of respondents stated that they had enough autonomy to do their own work, although most of those felt constrained by the restrictive effects of the hierarchical structure and bureaucratic processes encountered, provoking them to develop local responses in order to gain greater flexibility. A widespread issue expressed by most of the same respondents indicated that structural boundaries prevented members from exercising influence or control beyond their own areas of responsibility.

interview transcript extract:

Respondent: *..... you need to be free to deal in the supply chain at the level that is important for getting the job done, not going up and down through management chains to get decisions.*

identification code: 3RMC line no's: 143 - 145

interview transcript extract:

Respondent: *Put it this way, the standards at present ahh ..... are a more regimented standard rather than flexible standard ..... so everything's pretty much the same ..... irrespective of the different needs.*

identification code: 4RJW line no's: 63 - 65

interview transcript extract:

Respondent: *... the transactions aren't complex. But the hierarchical thing seems to get in the way often ... it just wraps up layers of action ...*

identification code: 3RBB line no's: 474 - 475

interview transcript extract:

Interviewer: *Do you have any say in how your workplace is arranged?*

Respondent: *I'm allowed to within reason.*

Interviewer: *Could you elaborate a little on that?*

Respondent: *Anything that I want to do basically, as long as it does not cost any money.*

identification code: 12SBJ line no's: 351 - 354

All respondents said that they learnt continuously in their roles, primarily through experience on the job. Most of those interviewed said that there were systems for capturing and sharing knowledge but several questioned the effectiveness. The major reasons appeared to be that too much knowledge was kept in individuals' heads and structural boundaries inhibited the transfer of knowledge across the supply chain.

The majority of respondents indicated that physical boundaries restricted the chances to interact face-to-face and that they got their jobs done 'despite' the workplace design situation, rather than 'because' of it. Information systems existed but were of limited use at the operational level and consequently provided little valuable feedback to management levels. In respect to the social system, all respondents said that they received the support that they needed from others and were able to help those who relied on them.

interview transcript extract:

Interviewer: *What can you tell us about your personal contacts in the supply chain?*

Respondent: *I think you need to maintain the contacts because that way you know what is happening in the whole of the process. If you don't do that, you rely on formal systems which aren't always up to date.*

identification code: 12SMM line no's: 255 - 258

interview transcript extract:

Respondent: *Um, its one of those situations where we all have to sort of help each other, and that means getting the chance to meet up as often as possible.*

identification code: 12RJO line no's: 713 - 714

### **7.5.5 The Structural Constraints to Team-Working**

There is substantial evidence from the interview data that the supply chain participants made sincere efforts to cooperate and work together collaboratively, but that they encountered obstacles to truly effective teamwork and virtual team-working arising principally from the organisational structural constraints. Groups which made up the supply chain in this case, operated as distinct, individual units within their respective organisational structures. In reality however, the groups were functionally interdependent, interlinked through their various roles in the overall network process.

Traditional functional and divisional structures are designed to ensure vertical communication and coordination, but they are not well suited to operating in cross-functional arrangements or in facilitating horizontal coordination, both of which are required for supply chain and network operations and interactions. In this case, the supply chain participants made the supply chain work in spite of the lack of a strong integrative horizontal structure. The burden of integration fell heavily on key individuals and other participants who engaged in a variety of informal and ad-hoc practices to interact, communicate, and coordinate with each other. This involved the crossing of both structural and physical boundaries in order to enter each other's territory to interact successfully.



interview transcript extract:

Interviewer: *How effective are the information systems across the chain?*

Respondent: *With information systems, that is all you can transmit, is information ..... but if you are face to face you can transmit information and meaning.*

identification code: 3RKB

line no's: 408 - 409

A possible suggestion designed to strengthen horizontal coordination and teamwork involves formal acknowledgement and identification of teams based on processes. This would require a single designate having overall authority and responsibility as the process owner, responsible for planning and coordination in relation to other groups or members in the team. This solution has significant obstacles to negotiate in terms of hierarchies and organisational structures being maintained but is a reality which must be faced by the organisations concerned in this case study and others, currently in, or contemplating involvement in a network alliance.

Such a structural rearrangement may simply formalise what already happens in many practical instances, however it is suggested that empowerment to cross previously prohibited boundaries would significantly improve many of the problematic areas confronting network enterprises. However this may be achieved, the main objective is to significantly lessen the tension between the vertical and horizontal structures arising from dual authority relations.

A stronger horizontal structure should help to overcome the barriers to teamwork that are presently created by boundaries between organisational and inter-organisational groups, but structure alone cannot ensure a sustained high level of teamwork. More innovative uses of technology and introduction of physical workplace solutions which encourage interaction and support teamwork activities are seen as ways to underpin the necessary structural parameters.

### **7.5.6 System Design and Implementation**

Successful implementation of advanced technological innovation in organisations, including in this case enterprise-wide information systems, would seem to depend on the systems meeting four basic conditions (Premkumar, 2000; Avery & Eason, 1991). These are summarised and listed following (refer Table 7.4).

**Table 7.4 Basic Conditions for Implementation**

<b>Condition</b>	<b>Criteria</b>
<b>Functionality</b>	the technical specification must address the functions the system will have to be able to perform in order that it can support the required range of organisational tasks.
<b>Usability</b>	the system must offer its functionality in such a way that the users will be able to master and exploit it without undue strain on their capacities and skills, albeit that this may necessitate some formal training.
<b>User Acceptability</b>	the system must offer its services in a way which the users will perceive, at a minimum, as not threatening aspects of their work which they hold to be important, and ideally as positively facilitating goals they wish to pursue.
<b>Organisational Acceptability</b>	the system must not only serve immediate task needs but must not impede other aspects of organisational functioning. Ideally it will serve as a vehicle to promote wider organisational goals and as a minimum it must provide an 'organisational match'.

In the case of the NetWorkPlace™ study, there may have been issues with the functionality and usability of the overall SAP system, real or imagined, but the main issue for respondents appeared to be user acceptability.

A long tradition of decentralised computing and the informal cooperative relations that evolved to accomplish tasks and solve problems in the supply chain were themselves a challenge to the implementation of advanced technologies. From the perspective of the people who operated the supply chain, their relations and practices worked, albeit not always as well as they may have liked. In the future they are likely to continue to resist using anything that they perceive does not meet their needs and that may require them to change their current ways in order to accommodate new technology or systems.

Four broad approaches to systems design and development were identified across the range of information technology and computing literature. These are included following (refer Table 7.5) because of the close alignment to approaches adopted in many corporate workplace design scenarios.

**Table 7.5 Broad Approaches to System Design and Implementation**

Condition	Criteria
<b>Centralised</b>	In a centralised computing approach decisions are dictated largely by the deliberations of a central specialised systems group.
<b>Decentralised</b>	In a decentralised computing approach computer specialists operate locally within the organisation and may consult local users, but decisions are still largely restricted to technical matters.
<b>Representative</b>	Representative design and implementation involves users as well as specialists and is undertaken by a reputedly representative group on behalf of a larger number of the organisation's members (and is, in this sense, akin to a centralised approach).
<b>Participative</b>	Participative systems design and implementation entails users controlling and taking responsibility for the computer applications. (It is presumed that users in this sense encapsulates both operational end users and those with the capacity to ensure an 'organisational match'.)

The approach to all design problems advocated throughout this thesis extends the notion of participative, human-centred design to encapsulate as a central focus, consensus that all objective and subjective components of the design context are considered and agreed upon.

In relation to this case study where information technology and also workplace design problems were concerned, it was reported that some past consultation with individuals and representative groups referred to as steering committees, had been undertaken. Ultimate responsibility and authority for decisions was always vested however with either specialist IT groups or managers responsible for property assets.

interview transcript extract:

Interviewer: : *Would you share your thoughts on the value of user participation in the workplace design process?*

Respondent: *I absolutely believe there should be user participation, but at the end of the day someone has to make a decision on the corporate good ... and those two do not always go hand in hand.*

identification code: 3RJI line no's: 210 - 214

interview transcript extract:

Interviewer: *Would it be practical to implement user participation across the supply chain?*

Respondent: *I think in this organisation it would be difficult. Mainly for cultural reasons and I do not think we have a vision in that regard. We do user participation but it is tokenistic ... so we do it because of IR pressure.*

identification code: 3RKB line no's: 445 - 449

This reflects the hierarchical and bureaucratic nature of the majority of processes typically reported throughout the study interview sessions. Respondents' comments indicated that any previous consultation processes seemed to have had little impact on the ultimate outcome. It was therefore not surprising in relation to the 'space of

flows' that the SAP information system seemed to be falling well short of the purported contributions that such centralised systems were designed to make. In terms of the 'space of place', responses strongly indicated that a general apathy connected with workplace design issues prevailed across the entire network.

interview transcript extract:

Interviewer: *Are you aware of any policies in relation to workplace design or office layouts?*

Respondent: *Um, only in a .....in a .....in a restrictive sense. (laughs) Thou shalt not ..... Yeah, more in the sense that .... uuum, ..... that you um, you know, you're allocated certain spaces and certain configurations, and um that sort of thing. .... In terms of facilitative workplace design and stuff, .... I'm not aware of any policy related to that.*

identification code: 3RBB line no's: 681 - 686

interview transcript extract:

Interviewer: *As far as you are aware ..... does the organisation have a formal policy of workplace design?*

Respondent: *I am sure it does. .... But don't ask me what it says.*

identification code: 3RCF line no's: 182 - 184

interview transcript extract:

Interviewer: *Does the organisation have a formal policy in relation to workplace design?*

Respondent: *Yes it does have a policy, but that is all I know.*

identification code: 3RKB line no's: 389 - 390

interview transcript extract:

Interviewer: *Does the organisation have a formal policy in relation to workplace design?*

Respondent: *I am personally not aware of it.*

identification code: 3RMA line no's: 429 - 430

interview transcript extract:

Interviewer: *As far as you're aware does the organisation have a formal policy in relation to workplace design? e.g. office layout, space utilisation etc?*

Respondent: *Umm, not really I don't think.*

identification code: 3RMC line no's: 375 - 377

interview transcript extract:

Interviewer: *Does the organisation have a formal policy in relation to workplace design?*

Respondent: *It has a formal policy in terms of office ..... um ..... office fitout ..... standards um designed not around work flow but, .....but rather ..... getting the maximum number of people accommodated in the smallest amount of space.*

identification code: 3RSC line no's: 590 - 595

interview transcript extract:

Interviewer: *Do you know if the organisation has a policy regarding workplace design?*

Respondent: *I suppose we have but I know nothing about it.*

identification code: 3RTR line no's: 178 - 179

interview transcript extract:

Interviewer: *As far as you are aware, does the organisation have a formal policy regarding workplace design, office layout, that sort of stuff?*

Respondent: *I know that the policy exists ..... and that's about it.*

identification code: 4RDS line no's: 417 - 419

To suggest then that simply implementing a method incorporating the participative design approach, for future technology and workplace design initiatives in the

network, appears in itself to be inadequate. Both the network enterprise objectives and the interests of workers need to be much better understood. These needs can only be addressed when those affected are directly involved in and have responsibility for the process.

The focus must be on the network as a whole, taking account of both user and organisational needs. Full and detailed attention needs to be given to the realities that all participants face, to the central role that the social system plays in cooperation through which supply chain objectives are achieved, and to the structural impediments which inhibit open communication and social interaction.

An approach which takes account of these considerations would place 'context' as the central focus and thus be consistent with that proposed throughout this thesis as essential for all workplace design applications in contemporary environments. Such optimisation of the new knowledge economy resources has been shown through this research to be possible by adopting a trans-disciplinary approach to the investigation of the redefined spatial dimensions brought about by the network enterprise phenomenon.

**Proposition 6**

Only through a thorough investigation and full understanding of the 'contextuality' of the case in question, can the 'space of place' and the 'space of flows' be implemented and integrated in a way which enables one to complement the other.

### **7.6.0 The Phenomenon of 'Feral Systems'**

The enterprise wide information system, made possible by the development in technology and implemented at vast expense to the organisations concerned, was found in this case study to be functionally rigid, highly structured in its distribution, restrictive in regards to access rights, and consequently ignored or under-utilised by large sectors of the social system. Moreover, it focused on the technical prowess of the SAP (Systems Application Protocol) solution at the apparent expense of supporting the actual activities and needs of the network entity members. Such a focus appears to have encouraged the spontaneous creation of 'feral systems'.

These involved location specific, ad-hoc computer based processes which were used to avoid engagement with the larger SAP solution, but necessary in order to successfully undertake day-to-day work activities. This finding raises concerns about the large scale investment and the application of enterprise wide technology systems and seriously questions, at least in this case, the role of the SAP system and its ability to support real world (operational) activity. This has implications for the way networks and organisations in general are approaching the interface between the social world existing in the 'space of place', and interaction through the 'space of flows'.

It was previously mentioned that the cost for an ERP (Enterprise Resource Planning) system and associated total technical system upgrade for the customer organisation in 2004 was around \$60m. This investment was made despite it being a well known fact that introduction of the previous SAP system did not lead to large scale improvements in performance and in fact anecdotal evidence indicated a decrease in staff satisfaction after implementation. This exemplifies a phenomenon in much of modern management practice and decision making which Ritti and Levy (2003: 73) described as "what can't be cured must be obscured."

The IT industry has been highly active in promoting computer software packages such as SAP (Systems Application Protocol) and ERP (Enterprise Resource Planning) systems to organisations throughout the world as the complete solution to all enterprise wide information access and distribution problems and tasks. SAP in particular has enjoyed growth, development, and reported success across the globe. In general, academic research into large systems has largely been limited to issues such as the technological benefits of SAP (Wand & Weber, 2004; Rosemann & Green, 2002; Scott & Vessey, 2002) and how the technology can be improved (Hillson, 2001).

There now appears to be a movement in academic research circles which takes into account the 'soft' or socially based issues associated with the traditional computing capabilities approach. Authors such as Al-Mashar and Al-Mudimigh (2003) have suggested that many of the factors concerning the implementation of such systems are of a social nature. However many organisations including those under investigation in this case study, appear to ignore the documented research and have implemented enterprise wide information and computing systems without any apparent regard for the social implications or consequences. Kraemmergaard and Rose (2002) described organisational competence as a required skill for managing

successful system implementation. Such implementation should take into account the history of the social environment and the distribution of power within an organisation (Houghton et al., 2004; Hobson et al., 2005).

The significant finding in relation to the enterprise-wide information system which informs the focus of this thesis, revealed instances in almost every location of members by-passing the corporate system. They tended to rely on their own ad-hoc arrangements which functioned successfully in the context of their immediate social environment and those on which they were dependent. This involved employees developing simple (usually computer based) systems relevant to their own area of work and responsibility, but not part of nor supported by the larger system. These were not accessible to other operational areas nor were they condoned by management and in the main, management appeared to not even be aware of their existence.

Based on the 'skunk work' concept of Tushman and O'Reilly (1999), Houghton and Kerr (2004) who were IT researchers also involved in the SCOP project, referred to these as 'feral systems'. The 'feral systems' effectively enabled operations to be undertaken successfully, but provided no access to information by others outside the immediate local system which was in direct conflict with the objectives of the ERP and SAP type enterprise systems. This evidence raises some complex issues in regard to the forms and distribution of power within the network and what that enables certain groups who hold the power to achieve.

### **7.6.1 The 'Feral System' Concept**

'Feral systems' in this case are defined as, and confined to, isolated groups in the network who perform functions by developing their own methods as a result of tension or conflict with the ideals of the mainstream system. Feral is taken in its general usage to mean anything that is in a wild state or is considered to be out of control to the extent that it is not manageable by outside parties. As a concept in this application it is thus describing wild, untamed collective entities outside of the control of the larger management system. More specifically, driven by a perceived need to rebel or perhaps simply for survival, in order to get their work done, they are groups that have adapted to the organisational environment in which they find themselves. In terms of this case study, they are formal or informal groups who have formed and developed their own alternative methods and systems to get

around the rigid structure of the network-wide SAP system. These 'feral systems' could then be considered in terms of the mainstream thinking or behaviour as a form of organisational rebellion or deviance.

In the NetWorkPlace™ study however, the intention of the creators of these 'feral systems' was not to subvert the operational outcomes. Quite to the contrary, in their own minds they appeared convinced that this approach of maintaining control over their own systems and processes, represented the best way of facilitating the overall network processes. Clearly, this 'feral-ness' represents a symptom of the tension between the management and operational systems, between those 'in control' and those 'under control', and between those 'in authority' and those who by virtue of their operational knowledge, are 'an authority'. The term system as used in this discussion, is not confined only to a computer system, nor just a technical system, a management system, or even just the social system (unless otherwise defined). System as used in this sense follows the lead of Checkland (1981) who considered the 'system' as being something representing a 'whole', which may be made up of a number of different sub-systems in various configurations, typical of the network entity.

### **7.6.2 Evidence of 'Feral Systems'**

The research undertaken as part of the overall SCOP project revealed that the supply chain operation appeared to be working as an effective system. However only the key operational staff seemed to know exactly what went on and the day-to-day operations clearly functioned outside of the influence and the field of view of management generally. A number of responses indicated ways that key operational staff short-circuited the SAP system to get work completed. Interviews showed that several people had some familiarity with SAP but used their own systems, incorporating several examples of technology to work around it in order to get their jobs done.

These ranged from the use of spreadsheets and simple databases which were not accessible through or compatible with the SAP system, frequent use of the telephone and emails to communicate work directives and to seek out information, fax machines, written diaries, and face-to-face communication at every opportunity. Cases of reorganising work to circumvent SAP principles and protocols through the use of 'feral systems' as they have been described, did however seem to have their



own forms of rules and regulations established within and adhered to by the local social system. In essence, the methods used by the various operational groups were created by the members of the network to the extent that they had well organised procedures for operations based on their own technology and their own ideals. SAP appeared not to meet the needs of the workers in this regard and thus was considered by them to be inadequate for their tasks.

The use of spreadsheets and other databases by operational staff to feed data back into the SAP system for the purpose of management reporting raised serious concerns as to the enterprise-wide nature of the NetWorkPlace™ technology solution. As suggested by Johnston and Milton (2001), information systems are socio-technical structures intended to support real world activity. SAP appeared in this case at least to be seriously handicapped through the implementation deficiency referred to by Al-Mashari and Al-Mudimigh (2003) of being overly concerned with the collecting and storing of enormous amounts of information, whilst providing little in the way of functionality which was accessible to operational staff in supporting decision making and problem solving. It required compliance with its own rigid standards of operation rather than fitting the flexible requirements of the network operations. It was thus perceived as supporting a control and surveillance system rather than being an effective operational tool with the consequent proliferation of 'feral systems' necessary to address operational requirements.

It is no surprise to discover that the act of imposing any form of standardisation mechanism onto a large group, without adequate explanation or the provision of the required training as appears to have been done in this case, will be met with suspicion and potentially, resistance. The development of 'feral systems' is indicative of the response from the operational areas of the NetWorkPlace™ to the implementation by management of the all encompassing SAP information system into this network. The operational staff in this case viewed SAP as a management control tool by virtue of the fact that it imposed a standardised set of processes and thus represented an attempt to normalise or change the entrenched value system. The management group viewed it, as did the technocrats, simply as an efficient way to record, monitor, and distribute critical business information across the supply chain, without regard for the impact on existing social value systems or cultures.

Tension was thus created because of the alternative views held by operational staff in comparison to those of management (Checkland, 1981). In attempting to improve the operations of the network through the imposition of a process designed to force

compliance with mainstream ideals, and the expectation that the social system will automatically adapt, has created a paradoxical situation characterised by conflict and shifting power dynamics.

interview transcript extract:

Respondent: *We just keep about our business the way we know how, it's all experience and learning from your mates*

identification code: 12RCG line no's: 287 - 288

Respondent: *..... we just get on with our job and we make our own rules about how we do that ..... it's just worked out amongst the boys.*

identification code: 12RCG line no's: 373 - 374

interview transcript extract:

Interviewer: *Would you comment on the people and the interaction you have in the supply chain?*

Respondent: *I think that argh ..... people I deal with both internally and externally I find very credible, reliable, trustworthy, and certainly approachable. I suppose most of my interaction both internally and externally is over the phone or email ... so it will never be ideal, never have that face to face quality ... but I think it works very well for what it is. I can't be everywhere.*

identification code: 3SBG line no's: 214 - 220

Interviewer: *How important are personal contacts when dealing with others in the supply chain?*

Respondent: *Oh very important ... very important at all levels. Um, you can't necessarily put a dollar value on it, on a relationship that is, but its crucial.*

identification code: 3SBG line no's: 390 - 393

It is acknowledged that not all operational staff across the entire network held precisely the same views, however the data indicates a general consistency in terms of social values and consideration for the well-being of other work colleagues. It is also acknowledged that such observations may not be true for all organisations involved in network enterprise alliances however in this case the data is sufficiently convincing to be confident that the introduction of SAP type systems and the huge growth in technology utilisation constitute one of the major influences in inhibiting network harmony.

The incompatibility of ideals and objectives displayed by and between the management group and operational staff in this case, led to a clear delineation of the centres and sources of power and positioning within the network. Depending on the parameters used, the positions of dominant and non-dominant groups appeared in the network enterprise to be in a continuous dynamic state. In the centralised arrangements of traditional hierarchical organisations it has long been agreed that power resides at the top with those who are 'in control' and is filtered down the system to those who are 'under control'. Others have argued that power resides in the political elements of an organisation or institution, to the extent at least that politics determines the distribution of power (Ulrich, 2003; Jackson, 2000).

Both of these models are evident in this case study as illustrated by the hierarchical nature of all of the partner organisations and the involvement of the government owned corporation. Certain functional areas were seen as being able to exert a form of power gained by having specialist expertise through the governance management framework. Examples drawn from within the customer organisation include the Information Technology Division who imposed a SAP system in an effort to control the 'space of flows', whilst Property Division attempted to control the 'space of place' through the imposition of a standardised office design policy. Both of these instances appear to have done more to inhibit rather than enhance the facilitation of network activities and interactions.

Castells' (2000) theories provide another dimension to the nature of power dynamics enabled by his concept of the *network society* which claims that power is embodied in the access to and use of information, and thus operates in a horizontal rather than a vertical mode. Such theory in action was adequately demonstrated in this study through the phenomenon of the 'feral system'. Operational staff who were the keepers of the tacit information which determined how the supply chain functioned, despite the imposed controls, communicated this through ad-hoc systems and channels created by social networks. They were motivated to find ways to get around the mainstream system. This created another dichotomous pairing in the overall power struggle whereby management, due to their hierarchical position were perceived to be 'in authority', whilst the staff who possessed the critical operational knowledge to run the supply chain could be considered to be 'an authority'.

Conflict in organisations was argued by Morgan (1997) to arise whenever the interests of different groups collide. In making reference to a classic study by W.F. Whyte entitled *Money and Motivation*, Morgan (1997) suggested that the workers know that to maintain their positions they have to find ways of beating the system and do so with great skill and ingenuity. In terms of the distribution of differential power, based on the issues raised in the NetWorkPlace™ study, such contingent levels and amounts of power which appeared to be continuously in a state of conflict, are postulated to be the major cause in upsetting the balance of the network.

For the management discipline this has implications for the areas of governance relating to network structure, the implementation of technological systems, and policy formulation. For the design discipline, there are significant implications for the integration of the technical components of the 'space of flows' and the physical

components of the 'space of place' with the social aspects of the network community. Neither of these can be addressed in isolation, strengthening the proposition that architectural design in this context must be a trans-disciplinary activity.

### 7.6.3 The Feral Flows and Deviant Places

The notion of 'feral systems' was introduced into this thesis in relation to issues associated with the implementation and use of technology because this has specific application to the concept of the 'space of flows' through its reliance on the possession of knowledge and the communication of information. Through the issues revealed and the discussion raised, the presence of a 'tension' between the central control system and the feral systems has been proposed. This has been extended to embody the notion of disparity in the levels, types, and distribution of power within the network between those 'in control' and those 'under control', or alternatively those 'in authority' or those who become 'an authority'.

The notion of feral-ness or deviance has been shown in the investigation of the 'local dimension' (The Case Within - refer Chapter 6) to similarly have direct application to the 'space of place' through physical workplace design and spatial allocations. Thus tension and power are established as essential issues to be considered in order to balance the technological aspects of 'flows' and the physical aspects of 'place' in order to support sustainable management practice and operational functionality in the network enterprise context.

Despite the promise in this network that the introduction of SAP would provide a seamless ERP system across the enterprise, the presence of 'feral systems' indicate that many of the activities at the operational level were about getting around the system and making life more sane at the local level. The response that "*no-one trusts SAP*" strongly indicated a widening gap between the technological and social systems. The high reliance on phones and emails combined with the perceived difficulties in the user interfaces of SAP highlighted that the social system sought expression and found ways of working which met its needs rather than fitting into the needs of the technology.

The enormous investment made into the implementation of the ERP system seems to have been justified by a management belief in technology's (magical) ability to unleash otherwise untapped potential for innovation. This clearly has not occurred.

Technology appears to have been utilised to create a large number of processes all falling under the general heading of decision support systems. In reality, these proved to be just systems producing more information faster while becoming less meaningful and relevant, thus producing confusion. Such confusion then drove people back into the social system to find support. This suggests that the tacit knowledge in the social system had more relevance or at least was viewed as being more reliable than the explicit data in the information systems.

Combined with the role of physical place in supporting social system interaction, it is not difficult then to come to the conclusion that managing the network is more complex than just introducing technology as the panacea for all ills.

#### **Proposition 7**

It is the connections within the social system and the enablement of these through user-acceptable technological systems and interfaces, integrated together with design that supports physical face-to-face interaction which are more likely to hold the key in transforming the feral flows and the deviant places revealed in the NetWorkPlace™ study.

### **7.7.0 'Positioning' as an Explanatory Concept**

In order to inform the design process, it is necessary to make explicit the full range of dynamic forces occurring within the network context. The NetWorkPlace™ study revealed the existence of a level of conflict embedded in the various power relations across the network. This appears to have been a consequence of the imposed structural components and the coping mechanisms or strategies utilised by members as a result of social connections and tacit knowledge centered around the use of information technology systems and physical location in the network. Thus, the concepts of **position** and **positioning** are introduced as a way to present the dichotomous realities inscribed in the hierarchical power structures and formal relations, together with the power imbued through social interaction and informal relations.

Such positioning relates to those who had the ability to rule or manage, that is those **'in authority'**, and to those who could be considered as **'an authority'**, possessing attributes or knowledge which enabled them to function without complying with the formal rules and policies established by management. This in no way implies that the intentions of either group were dishonourable or subversive in any way, at least in relation to their own objectives and values. It does highlight however, that the dynamics of the network were out of balance and that conditions for achieving any outcomes, appropriate workplace design solutions included, were less than optimal.

Bourdieu (2000) suggested that social problems are social relations that emerge from conflict or confrontation between two groups beholding of two different systems of antagonistic interests. "In the relationship which constitutes them, the choice of the moment and sites of battle is left to the initiative of the challengers, who break the silence of the *doxa* and call into question the unproblematic, taken-for-granted world of the dominant group" (Bourdieu, 2000, 104).

Krackhardt (1990, 342) argued that "an accurate cognition of informal networks can itself be a base of power", suggesting that power accrues not only to those who occupy the central network positions, but also to those who have an accurate understanding of the network in which they are embedded. He further claimed that people who are 'experts', people 'in authority', and people who know 'how things work' around the organisation are likely to be perceived as powerful. These categories align with those identified in the NetWorkPlace™ study as the people who were generally viewed as possessing some form of power and influence. Krackhardt (1990) concluded that there were both structural and cognitive power bases in an organisation, a finding also borne out by the NetWorkPlace™ study.

It is not enough simply to have power, but necessary also to know how much and what kinds of power others have (Pfeffer, 1981). This is a critical question not only for researchers and designers but also for political actors in organisations. One way to acquire the answers is to understand who has access to and the control of the flow of information in the organisation (Stephenson, 2000; Pettigrew, 1973). In order to discover who has power, the power to do what must firstly be understood.

### **7.7.1 The Power of Position**

'Power of position' is intended to relate to those in the network identified as having been **'in authority'**. Such authority is deemed to have been accompanied by the

status and privilege which came with particular hierarchical positions held in the respective organisation or network. From Bourdieu's (2000, 104) perspective, "those in dominant positions operate essentially defensive strategies, designed to perpetuate the status quo by maintaining themselves and the principles on which their dominance is based."

interview transcript extract:

Interviewer: *Are you in a position to implement changes?*

Respondent: *I do not have the power. I've got issues with both space and policy ... but the reality is I do not have the authority ..... I am willing but not capable.*

identification code: 3RKB line no's: 438 - 443

interview transcript extract:

Interviewer: *So you're talking about symbols of power.*

Respondent: *Yes, those symbols, other symbols of power, the corner office invariably, the toilets, the showers which are all designed for one ... the logical interpretation is that I'm superior to you and this and that, I'm an important person. It seems to me as an outsider coming in here, that it's more important for us to have big offices.*

identification code: 4RAM line no's: 298 - 302

Stated simply, in relation to the NetWorkPlace™ study, those in a position of power bestowed by authority were able to rule the 'space of place' and the 'space of flows' to a large degree through the *cultural arbitrary*. This was attempted through the imposition of formal policies, systems, and standards which regulated the use of and access to both technology and physical space.

Such political or hierarchically based power is generally designed to control and monitor organisational behaviours through bureaucratic measures available to the management elite. This could be described as an attempt to impose a universal acceptance of the social order required and decided by the organisation, exemplified by the enforcement of spatial policies and standards to ensure that people are 'put in their place', and more importantly, know what and where that 'place' is.

The process used to indirectly establish order and restraint through cultural mechanisms, rather than by direct coercion, is known as *symbolic violence*. Examples of this apparent in the NetWorkPlace™ study included the implementation by management of the over-arching SAP information system which attempted to change the culture of how people work. It did this by attempting to gain acceptance of an information sharing mechanism enabled by increased reliance on technology which was neither familiar to nor trusted by the operational levels. In parallel, was the added fear that such a system increased the ability for surveillance

of both 'personal' and 'operational secrets', further widening the relative power positions of the management and operational groups.

Another instance was the high level of security enacted through physical restrictions to certain places. Acceptance of such measures by operational staff perpetuates the domination of the management elite. In Bourdieu's terminology, the organisational attempts to control 'what people know' and 'where they go' are acts of *symbolic violence* designed to influence the *habitus* of members and thus determine 'practice'.

### 7.7.2 The Power of Positioning

'Power of positioning' in this case is attributed to a member of the network who was able to position themselves in relation to others, as '**an authority**' in a particular area of activity or expertise. This provided the ability to be able to manipulate circumstances through the possession of what could be termed as 'expert' knowledge, or 'local' operational knowledge. The *cultural arbitrary* confers certain status and privilege upon those who have expert technical knowledge.

Through management's reliance on technology as a dominant structural component of this network, a high level of cultural value was attached to being able to utilise such technology. Thus, those with expert knowledge in this area, developed a *habitus* which enabled them to either explicitly or covertly institute practices via technology system design and implementation, resulting in a level of potential power through positioning. This provided the ability for them to develop self-preservation strategies which established, maintained, and enhanced their social position and influence within the *field* (in this case the network).

When acts of *symbolic violence* are not seen as legitimate or acceptable there is a tendency for some form of resistance to be instigated. In the NetWorkPlace™ study, an obvious example of this was the development of 'feral systems'. The operational staff devised passive means to undermine or avoid the imposed corporate-wide information systems. In order for them to achieve this required the possession of a certain level of *cultural capital* in the form of knowledge about how the supply chain actually worked and what was needed to keep it working. It also required a high level of *social capital* in order to be able to access the social networks and relationships which provided the necessary information and cooperation to maintain operations.



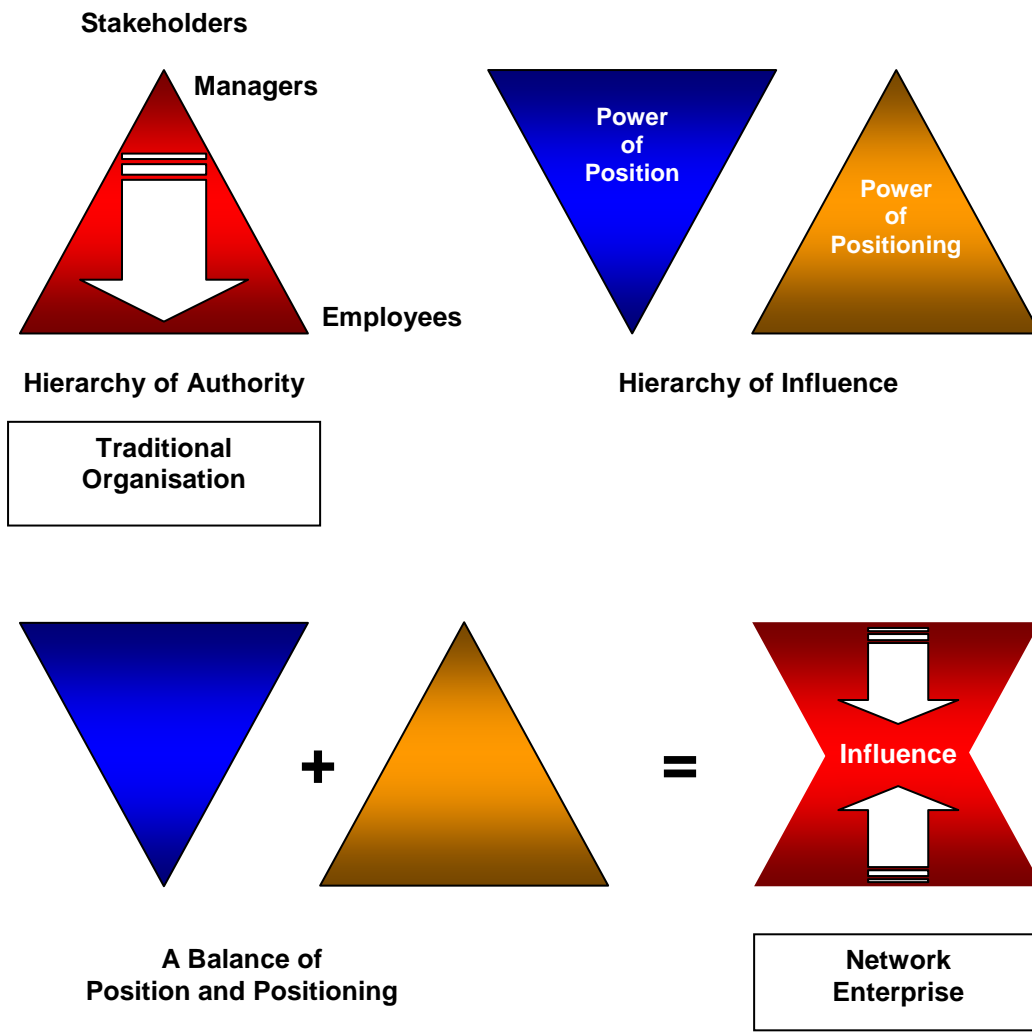
This was and remains enabled through a *habitus* conditioned by (in many cases, years of) learning on the job and knowing 'what to do'. It was obvious that those without sufficient *cultural capital* to transcend 'class' or categorical boundaries, abandoned the new technology and reverted to the knowledge that was contained within and which was relevant to their own 'class' or category. They further relied on both individual and group *habitus*, together with accumulated *social capital* to develop coping strategies which enabled them to contest the power dichotomy and to establish and maintain their own social order.

Informal controls or standards of behaviour are forms of self-regulation within certain groups and result from the collective or group *habitus*. In relation to the 'local dimension' of the NetWorkPlace™ study ('The Case Within' - refer Chapter 6), the establishment of an innovative workplace environment by a small specialised group, illustrated a combination of *habitus* and *cultural capital* in action. This was an attempt to combat the *cultural arbitrary* and model the possibilities for new ways and modes of working. The *symbolic violence* imposed on this group by restructuring them out of existence and taking over the physical space, only to convert it back to a traditional style office and cubicle layout, highlights the extremes of 'positioning' but encouragingly also models the possibilities if a balance of 'positions' can be struck within the existing power dimensions and dynamics.

### **7.7.3 The 'Position' - 'Positioning' Dichotomy**

Through reference to Bourdieu's theory of practice and cultural reproduction, an understanding of the power dynamics symptomatic of the NetWorkPlace™ can be gained. It is apparent from the investigation that maintenance of the power base held by the management elite was firmly connected to their belief in an ability to control both the 'space of place' and the 'space of flows'. It is also obvious that operational staff devised an ability to function in spite of the imposed control attempts. A level of power differentiation and conflict of interest typical of the classic bureaucratic model is therefore no surprise to find.

However, this group of organisations (currently in an established supply chain relationship) is masquerading as, or perhaps to be more altruistic, wishing to move towards a network enterprise model which the literature implies needs to be based on different structural and functional requirements. This notion is illustrated following (refer Fig. 7.2).



**Fig. 7.2 Balancing the Hierarchy of Influence**

It is envisaged that a less persistent bureaucracy (Walton, 2005), together with a more informed process which enables better integration of the 'space of place' and the 'space of flows', will greatly aid in achieving such balance.

From the investigations completed in this case, it would appear that the social system has the maturity, if not the capacity to progress towards this aim. It is apparent that a reorientation of the structural components, driven by more egalitarian motives in an attempt to gain acceptance by and the necessary adjustments from the social dimension is essential. Continuation of the past trend will only serve to further entrench the natural order of conflict between the power extremes, albeit that within these positions, a social order specific to each seems to

prevail. A re-orientation of the position – positioning dichotomy appears to be the best hope of achieving, perhaps not an equal balance of power, but a more egalitarian hierarchy of influence within the network and the individual organisations.

The NetWorkPlace™ study has revealed a case where power and authority are firmly rooted in both the actuality and the symbolism (or what Bourdieu might term *symbolic capital*) of the technical systems and physical layouts of the network enterprise investigated. An elaboration on what this means in terms of physical place and how the built environment may be able to contribute in terms of the workplace design process is explored through a discussion of the person–person–environment relationship following.

### **7.8.0 The Meaning of Place**

Dovey (1999) documented a comprehensive exploration of the way that power relations are embedded in spatial programs and it is in terms of power and authority, where it comes from, who has it, who can use it, and what implications this has for place, that the NetWorkPlace™ study is able to reveal and relate the contextual dimensions of the ‘space of place’ and the ‘space of flows’. In so doing, this study is able to provide a contribution which informs both design research and practice in a network context.

This required however a process to translate the implications for place and space which emerged from the investigation. It was apparent through the interview process that to entice full and fluid disclosure from the participants, the transactions needed to be undertaken in ‘their’ language. Any attempt to discuss design concepts or abstract theoretical conceptualisations such as the ‘space of place’ or the ‘space of flows’ was impossible without adopting a lay-persons approach. Gustafson’s (2001) research into the *Meanings of Place: Everyday Experiences and Theoretical Conceptualizations* provided the basis on which to establish a framework to achieve the translation from data collection to explanation.

The phenomenon referred to as ‘sense-of-place’ is taken in the NetWorkPlace™ study to mean the ‘rooted-ness’ people feel towards certain places or environments (Bell et al., 2001: 50). ‘Place attachment’ is another term often used in the design and environmental literature to denote the feelings embedded in a ‘sense-of-place’. Ubiquitous connectivity and personal mobility have caused the use of places and the notion of ‘sense-of-place’ to undergo some transformation.

Arefi (1999: 179) suggested that “this transformation has encompassed both the production and meaning of place, which have largely been influenced by modernity and globalization.” These global processes have contributed to a loss of meaning of place through “a devaluation and commodification of place” (Arefi, 1999: 180). Such change has brought forward the notion of ‘placeless-ness’, the process of globalisation has enforced standardisation to be commonplace in many aspects of modern life. The process of place creation influenced by globalisation in Arefi’s (1999: 185) opinion, “generally weakens local ties and fosters homogeneity and sameness.”

The counter-argument to this contained in the works of Castells (2000; 2004), suggests that globalisation has strengthened the resolve towards regionalism, that is, getting back to a local community identity. This would suggest then that the design of places that encourage local identity and place attachment, requires the incorporation of elements unique to the immediate context, be they physical, cultural, social, symbolic, technological, or whatever emerges as relevant to the community of place users (Saleenbey, 2004).

Ferrell’s (1996: 21) study of *Youth, Crime and Cultural Space* denoted cultural space as “those arenas from which young people and others construct meaning, perception and identity” and suggested that there exists “a dream of sanitized communities mirroring visions of consensual conformity.” Within this context he suggested that adults attempt to define and impose cultural space on the less powerful young, who at the same time attempt to unravel such imposition in order to carve out their own spaces for shaping their identity and assuming some control over their everyday life. It is not an enormous cognitive extension to identify some similarities between the power differentials apparent in Ferrell’s study and the power dynamics which determine many of the controlled environments, including that encountered in the NetWorkPlace™ study, characteristic of contemporary bureaucratic organisations. Place is often enforced by, as Ferrell (1996: 22) stated, “an aesthetic of authority, an aesthetic that seeks to remove from the public view the untidy cultures of undesirable populations.”

As suggested in the foregoing, arguments about modernity, post-modernity, globalisation, and the information society often focus on claims that the roles of space and place in contemporary society are undergoing fundamental changes.

For some commentators who claim that post-modernity and internationalism produce 'placeless-ness', specific places are becoming increasingly irrelevant and homogeneity is denying physical environments of a 'sense-of-place'. Castells (2000) and others claim that the way people relate to places becomes an important expression of social stratification.

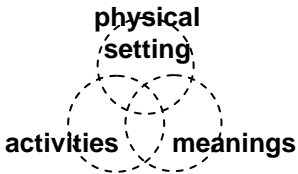
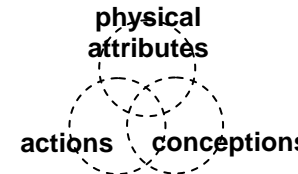
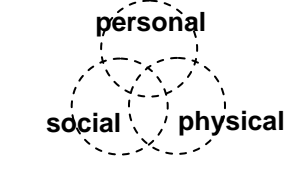
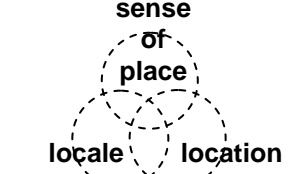
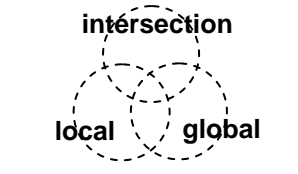
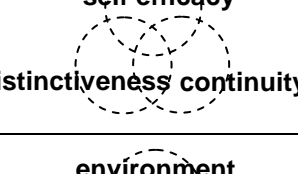
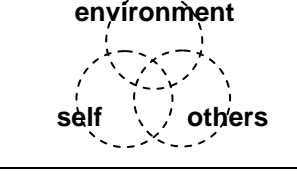
Such general theories however provide limited assistance in understanding the roles and meanings of place in specific cases of everyday life, and how such complexities relate to the conceptualisation of place in what Norberg-Schulz (2003) defined as 'lived space'. The framework extrapolated from Gustafson's (2001) work enabled the NetWorkPlace™ study to investigate such roles, meanings, and everyday conceptualisations of the 'space of place' and the 'space of flows' in an actual case study setting.

The body of research intended to provide an explanation of and some substance to the meanings of place appears to have emerged principally from the field of environmental psychology and can be linked to the early work on man-environment studies which commenced in the 1960's. This has since matured to encompass a growing body of work which has come to be categorised under the discrete heading of person – environment relations.

It is felt necessary to briefly track the range of concepts and theories which have developed over time, in order to establish an authentic lineage and provide a level of conceptual validity for the analytical framework adopted and applied in the NetWorkPlace™ study. This follows the logical sequencing of Gustafson (2001) but also refers to the original empirical sources which have previously been comprehensively documented in the literature.

These can be represented as tri-polar relationships. A comparative table of selected exemplars is shown following (refer Table 7.6) to provide a broad overview and to enable the logic used for the evolution of the NetWorkPlace™ Mapping Model (refer Fig. 7.3) to be more clearly understood in relative terms.

**Table 7.6 Conceptual Representations of ‘Place’ – Exemplars**

Theoretical Proposition	Tri-Polar Model
<p><b>Relph</b> (1976) identified 3 essential components:-</p> <ul style="list-style-type: none"> <li>• physical setting</li> <li>• activities</li> <li>• meanings</li> </ul>	
<p><b>Canter</b> (1977) also suggested a 3 component model, importantly, taken from a ‘user’ perspective.:-</p> <ul style="list-style-type: none"> <li>• physical attributes</li> <li>• actions</li> <li>• conceptions</li> </ul> <p>This model was later refined to include a consideration of the scale of places.</p>	
<p><b>Sixsmith</b> (1986) investigated the meanings attributed to ‘home’, and grouped meanings under 3 broad categories or what she referred to as ‘experiential nodes’:-</p> <ul style="list-style-type: none"> <li>• personal</li> <li>• social</li> <li>• physical</li> </ul> <p>Resembling the earlier notions of Relph and Carter but unlike them which describe the basic elements or constituents of place, Sixsmith’s concern is with the respondents ‘subjective’ attribution of meaning.</p>	
<p><b>Agnew</b> (1987) argued that the meaning of place emerges in a social context, through social relations and the complementarity of all of his 3 elements needs to be taken into account:-</p> <ul style="list-style-type: none"> <li>• sense of place</li> <li>• locale</li> <li>• location</li> </ul> <p>This version defines sense of place as a ‘subjective territorial identity’.</p>	
<p><b>Massey</b> (1995) proposed a more progressive theory adapted to the concept of globalisation, removing single isolated identities and boundaries:-</p> <ul style="list-style-type: none"> <li>• intersection</li> <li>• local</li> <li>• global</li> </ul> <p>She argued that what makes a locale special is the particularity of a linkage to the outside world. Places appear as points of intersection, integrating the internal and the external, creating a global sense of place. Places are thus not essences but processes.</p>	
<p><b>Twigger-Ross and Uzzell</b> (1996) put forward a creative adaptation of identity theory by investigating in what ways the place attachments of respondents expressed principles of identity:-</p> <ul style="list-style-type: none"> <li>• self-esteem / self-efficacy</li> <li>• distinctiveness</li> <li>• continuity</li> </ul>	
<p><b>Gustafson</b> (2001) investigated what places of various kinds may mean to people and thus how people relate to places:-</p> <ul style="list-style-type: none"> <li>• environment</li> <li>• self</li> <li>• others</li> </ul>	

The terms traditionally used to capture and communicate the meaning of place employ various, but conceptually similar notions such as 'place attachment' (Altman & Low, 1992), 'place identity' (Twigger-Ross & Uzzell, 1996), and the widely referred to 'sense of place' (Hay, 1998) amongst others. In an attempt to avoid undue ambiguity between and unintended alliance with a specific conceptual interpretation attached to the studies referred to herein, the generally acknowledged description applied to the 'character' of a place coined by Norberg-Schulz (1980), *genius loci*, (literally translated as 'spirit of place') is used in relation to the NetWorkPlace™ study. The justification for this is based simply on a desire by this author to not add to the ever-growing list of labels which would contribute little or no additional value to the field. Equally, it is not implied that the 'other' terms used by various researchers and authors are considered to be inappropriate in their own contexts.

Gifford (1998) noted, almost in a critical way, that much of the research undertaken in this area investigates 'special places', implying a limitation to the findings at some level. It is argued that without a full understanding of the contextual nuances of a place and full knowledge of the interpretations of every user of the place, that each is potentially 'special' in ways that can never be completely and absolutely known.

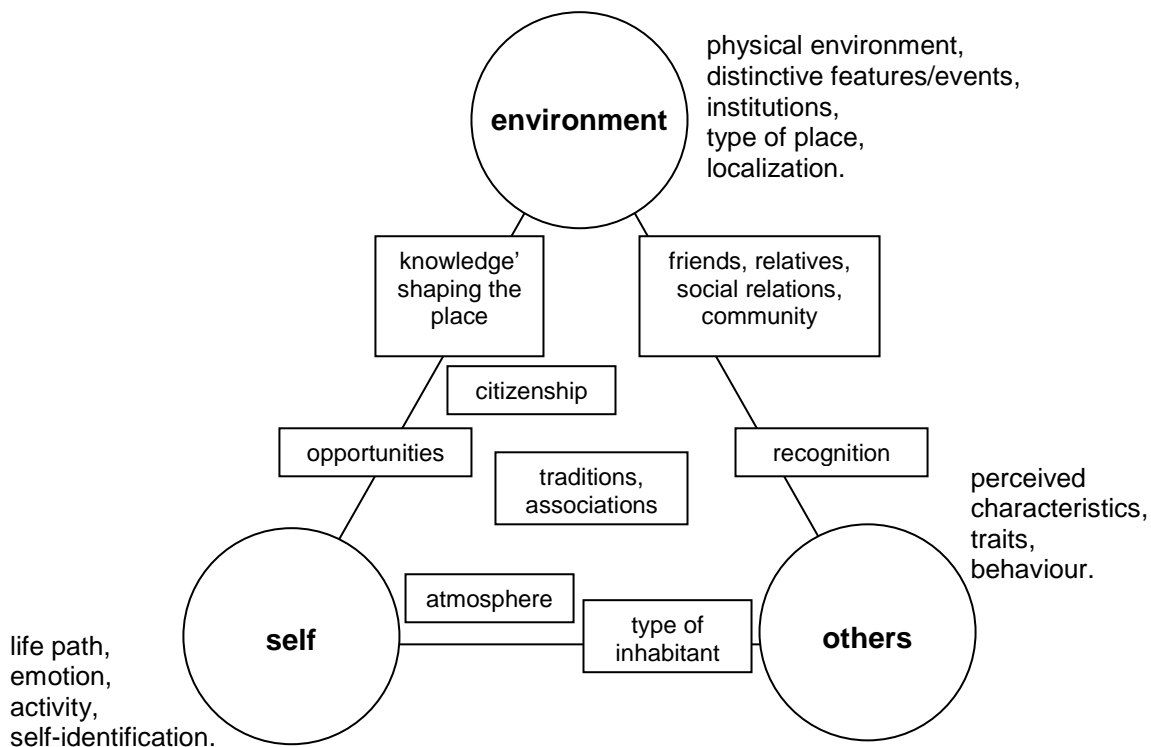
Perhaps Gifford's concern relates to the fact that research may have been limited to specific types of places but this seems to reinforce the argument that each potential case of place investigation has value in its own right. The pursuit of research opportunities concerning place in all possible contexts becomes then an obligation which the design professions must embrace and respond to.

Gustafson (2001) asked respondents to list the places where they had lived throughout their lives and places that had been important to them. His transcripts were coded to arrive at themes and typologies. Analysis of the interviews produced firstly, a model mapping the meanings spontaneously attributed to places and secondly, a number of underlying themes describing 'how' the attribution of meaning occurred, rather than 'what' meanings were attributed. Early in his analysis, three broad themes emerged, these being described as self, others, and environment.

The meanings of place expressed were often situated in the relationship between these themes, rather than unambiguously belonging to just one of the three categories. He settled on a three pole triangular model (refer Fig. 7.3). Within this model, the various meanings spontaneously attributed by respondents are mapped,

and importantly, are not forced into the three discrete categories but located around and between the three poles of self, others, and environment.

Such a model provides a richer and more flexible framework for capturing the myriad of meanings attributed to place than the three part models suggested by earlier theorists and researchers.



**Fig. 7.3 Attributed Meanings of Place**  
(Model by Gustafson, 2001)

The self–others–environment model was not however, the end of Gustafson’s (2001) analysis. A number of underlying dimensions of meaning emerged from his study, tentatively labelled as distinction, valuation, continuity, and change which helped to organise the attributions of meaning. This concept thus encapsulates in one model a significant number, if not all of the previous concepts and constructs which have emerged in order to explain the meaning of place and give some way of understanding the *genius loci* of particular places.

Gustafson’s (2001) model of attributed meanings related to self–others–environment can also be interpreted as representing the person–person–environment



relationship (P-P-E). This provided the logic and the basis for the formulation of a framework with which to complete the analysis of the interview data and importantly, contributed to the development of a methodology applicable to the network context which became one of the significant outcomes of the NetWorkPlace™ study.

### **7.9.0 The Person - Person - Environment Relationship**

The 'way of looking' at the person-person-environment (P-P-E) relationship in the NetWorkPlace™ study takes its lead from Smith's (2000: 218) "*Model of the interdependent discourses that are potentially involved in an environmental situation in relation to P E relationship*" which suggested that each of the frameworks enables something about the situation as a whole to be revealed. In terms of design relative to the built environment, situated in a specific social context, Smith's (2000) work clearly places the (E) as an active component in any investigation of (P)–(P) interaction.

This view of the person (P) – environment (E) relationship is based on the theory of interaction between separate, but mutually interactive entities wherein (P) and (E) are considered as separate parts of a Cartesian duality. ".....E potentiates ways of linking the aspects of the situation and, therefore, our understanding" (Smith, 2000: 235). As she goes on to explain, "the environmental situation is ..... a structuring mechanism that is the contextual setting of interpretation" (Smith, 2000: 236). The approach adopted by the NetWorkPlace™ study is consistent with the interpretivist component of the '*Interdependent Discourse Model*' (Smith, 2000). This underpins the logic used in formulating an extended analysis model based on Gustafson's (2001) 'attributed meaning of place – PPE relationship' method for the purposes of this study (refer Fig. 7.4, The NetWorkPlace™ Mapping Model).

Analysis of the interview data up to this point has revealed a consistent tendency by respondents to make direct and repeated reference to interaction with other people in the chain as a dominant characteristic of everyday life in the network. The contextuality within which such interactions occur, both tangible and intangible, implies the existence of a number of strong relationships between the social climate and issues of structure, enabling significant linkages to be concluded. In terms of the focus of this study, these can be further related to the physical and virtual components of the environment through the interview responses provided in relation to the physical workplace and the utilisation of technology. Conclusions can be

drawn from the discussions about behaviours and actions in 'space' that illustrate either compliance or non-compliance with the organisational and network systems at large.

It is thus through the (P)–(P) interactions (denoted as being between  $P_x$  and  $P_y$ ) and their relationship with the 'space of place' (denoted as  $E_p$ ) and the 'space of flows' (denoted as  $E_f$ ) that both the explicit and the underlying themes which impact on the spatial dimensions can be understood in this context. Informed by Gustafson's (2001) *'Attributed Meanings of Place Model'* and the relevant sector of Smith's (2000) *'Interdependent Discourse Model of the P E Relationship'*, a composite tool denoted as the NetWorkPlace™ Mapping Model (refer Fig. 7.4) has been constructed and is proposed as an essential component in the evolutionary understanding of the NetWorkPlace™ study. This model was designed as a tool to consider the attributed meanings as communicated by the interview respondents and in turn interpreted by the researcher (or practitioner) through the analysis process.

Depicted as a linear process, there is a logical sequence of focusing and refinement. This can be tracked from the original interview transcripts through to 'category' and 'construct' identification, and the defining of 'elements' (refer Chapter 5), which are then located within the NetWorkPlace™ Mapping Model to represent the 'attributed meanings'.

These are located within the model in relative terms according to the perceived positive or negative influence they exert on the spatial dimensions (either 'place' or 'flows') of the network environment, or alternatively, the degree to which they are impacted upon (refer Fig. 7.4). This then provides the basis for determining the significance of 'contextuality' and the roles played by the 'space of place' and the 'space of flows' within the network enterprise.

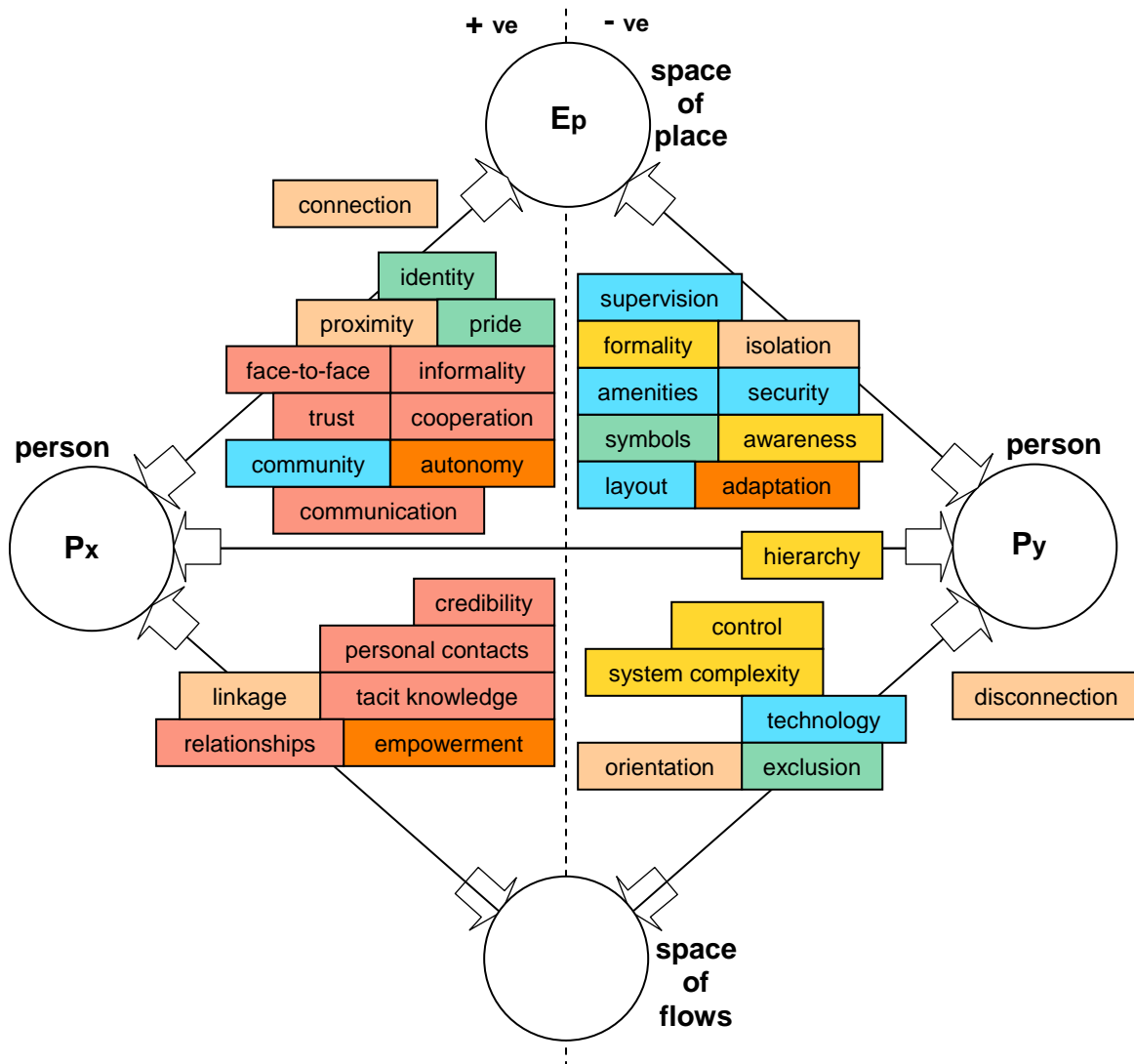
For the purpose of further clarification and to assist in the understanding of the NetWorkPlace™ Mapping Model (refer Fig. 7.4), Table 7.7 following provides a complete overview of the 'categories', 'constructs', and 'elements', which led to a consideration of 'attributed meanings' resulting from the analysis process. This is comprised of two parts indicating firstly, components of the analysis process undertaken specifically as the NetWorkPlace™ study, and secondly, those components of the SCOP project undertaken as a trans-disciplinary collaboration which further inform this thesis.

**Table 7.7 Aggregation of Analysis Component Categorisations:**

<b>Part 1: NetWorkPlace™ study</b>		
<b>Categories</b>	<b>Constructs</b>	<b>Elements</b>
Infrastructure (objectively defined)	Spatial Policies	Awareness Hierarchy Formality Control System complexity
	Location	Proximity Isolation Connection Disconnection Orientation Linkage
	Spatial Characteristics	Amenities Design layout Community of practice Supervision Security Associated technology
Social Climate (subjectively constructed)	Interaction	Relationships Personal contacts Face-to-face Informality Tacit knowledge Credibility Trust Communication Cooperation
	Participation	Autonomy Empowerment Adaptation
	Belonging	Pride Identity Exclusion Symbols

<b>Part 2: Trans-Disciplinary SCOP project</b>		
<b>Categories</b>	<b>Constructs</b>	<b>Elements</b>
Governance	Risk Compliance Policies Stakeholders	Specific 'elements' are not listed. The iterative, reflective processes undertaken in conjunction with the trans-disciplinary team focused on discussions at the level of 'constructs' (shown adjacent) enabling inferences to inform Part 1 – the NetWorkPlace™ analysis (shown above) to be incorporated accordingly.
Operations	Explicit Knowledge Implicit Knowledge Decision Support Systems Learning	
Infrastructure	Records Management Technology	
Social Climate	Trust Power Cooperation Collaboration	

The NetWorkPlace™ Mapping Model is shown following (refer Fig. 7.4). The elements interpreted to be aligned with a 'positive attribution' are located to the left and those aligned to a 'negative attribution' are located to the right of a central vertical axis (between Ep and Ef) which denotes the point or position of neutrality or nil effect. The central horizontal axis (between Px and Py) differentiates those attributions which relate more specifically to place (Ep) and those which relate to flows (Ef).



**Fig. 7.4 NetWorkPlace™ Mapping Model**

The above model can be viewed as consisting of four distinct quadrants:

positive place (+ve Ep)	negative place (-ve Ep)
positive flows (+ve Ef)	negative flows (-ve Ef)

It is clear that elements from both the objectively defined and subjectively constructed categories are distributed throughout the model. It can therefore be concluded that the structural and the social dimensions have some influence over or are impacted upon by person – person interactions both within the ‘space of place’ and the ‘space of flows’ of the network.

Location within the model provides an indication of which attributed meanings (and thus the issues interpreted as having the most significance for the study respondents) are related to the ‘structural’ or ‘social’ dimensions of the network and also to the ‘place’ or ‘flows’ aspects of the environmental context.

This outcome produces a clear and concise picture of the ‘workings’ of the network context and consequently the areas and issues which designers (and other interested stakeholders) can focus their attention upon.

Although no statistical significance can be attached to a numerical analysis (refer Table 7.8), the following break-down of which component categories influence or are impacted upon by which quadrants of the model are relevant from a qualitative perspective in terms of the frequency of occurrences:

**Table 7.8 NetWorkPlace™ Quadrant – Category Frequency Relationships:**

Quadrant	Objectively Defined Structural Category	Subjectively Constructed Social Category
positive place (+ve Ep)	20%	
		80%
negative place (-ve Ep)	80%	
		20%
positive flows (+ve Ef)	17%	
		83%
negative flows (-ve Ef)	86%	
		14%

A purely qualitative interpretation of conclusions which can be drawn for the various quadrants of the NetWorkPlace™ Mapping Model, based on its application in the NetWorkPlace™ study are consolidated and summarised in the following table (refer Table 7.9):

**Table 7.9 NetWorkPlace™ Quadrant – Qualitative Interpretations:**

<p><b>positive place (+ve Ep)</b></p>
<p>Physical <b>proximity</b> provides the opportunity for <b>face-to-face</b> interaction. This fosters <b>trusting</b> relationships and enables <b>communities</b> of practice to be nurtured, in turn creating the means whereby a sense of <b>identity</b> and <b>pride</b> in the physical workplace become firmly established. The greater the level of <b>informality</b> together with greater <b>autonomy</b> in relation to work practices and the use of space, appears to increase the level of interaction and <b>cooperation</b>. <b>Communication</b>, and thus the possibility of increasing (P–P) interaction is much richer when influenced and supported by a <b>connection</b> to physical place.</p>
<p><b>negative place(-ve Ep)</b></p>
<p>Physical <b>isolation</b> in de-centralised locations and over-bearing <b>supervision</b> in centralised areas have the similar effect of creating a sense of dislocation from group membership in the network generally. At the same time, physical dislocation has tended to create a greater connection to place, explained by peoples' inherent need to feel they belong to something, thus creating a desire for ownership of their workplace site. Poor quality <b>amenities</b> generally and a generic one-size-fits-all approach to physical <b>layouts</b> add to the negative attitudes towards place and reinforce the beliefs at least at the operational levels, that they have no influence over the design of the workplace. A lack of <b>awareness</b> of the existence of workplace design policies across all levels indicates on a superficial level at least, a degree of conformity with the norms of hierarchical structure. The high level of <b>formality</b> associated with structure and processes negatively impacts on the capacity to distribute and use space in creative and innovative ways, further inhibiting the interactional ability of the network members. An almost obsessive pre-occupation with <b>security</b> in terms of restricting access to both physical places and to information has created an atmosphere of distrust between the operational and management levels. There are vast differences in the quality and quantity of space allocated to the different hierarchical levels. Together, these constitute some of the <b>symbols</b> which highlight the great divide between operational staff and management, reinforcing the power and status held by the management elite. This has all contributed to the creation of an environment wherein members are forced into <b>adapting</b> their behaviours to suit inappropriate places in order to facilitate their daily processes.</p>
<p><b>positive flows (+ve Ef)</b></p>
<p>A combination of <b>personal contacts</b> throughout the network and the possession of a large amount of <b>tacit knowledge</b> assists operational staff in coping with the perceived threat of technology. These provide a <b>linkage</b> between members, albeit that this is achieved through basic levels of technology and locally formulated systems and processes. Such systems establish an essential level of <b>credibility</b> and continuity within the <b>relationships</b> that are socially constructed. All of these elements create <b>empowerment</b> for the operational level staff who use their knowledge to get around the enterprise and organisational standard protocols by developing their own feral systems in order to get their work done.</p>
<p><b>negative flows (-ve Ef)</b></p>
<p>A high level of organisational <b>control</b>, employed through the implementation of <b>technology</b> protocols and information systems, impacts on the ability of the network relations and P–P interactions to flourish. Technology is regarded positively by management as an essential monitoring mechanism and by operational staff negatively as a surveillance tool. Enterprise-wide information systems appear to be too generic in their application and complicated in their interfaces. The result is that they are perceived as being inappropriate by operational staff because the <b>system complexity</b> doesn't allow for adaptation to local ways of working, and is thus all but disregarded. Rather than enabling the network to function more effectively and efficiently, the 'space of flows' is currently perceived as being one of the causes of creating <b>exclusion</b> from network membership. Such <b>disconnection</b> makes it difficult for members to establish their <b>orientation</b> within the greater network and evidence strongly indicates that they revert back solely to the social system to establish relationships and to fulfill the need for a sense of belonging. It is obvious that the 'space of flows' is currently producing an alienating effect. Responses indicate that by incorporating considerations of how physical place can act as a supporting mechanism for increasing (P–P) interaction, that this may be a way of moderating the tension between the under-utilisation of place and the over-reliance on technology and information systems. In short, a greater balance between the role of the 'space of place' and that of the 'space of flows' appears to be necessary.</p>

It is apparent from the above quantitative (refer Table 7.8) and qualitative (refer Table 7.9) overviews provided, that in the sense-making processes employed by respondents in this case, the **positive attributions** of meanings of **'place'** are **strongly related to** elements of the **social dimension** of the network, whereas **negative attributions** are **strongly related to** elements of the **structural dimension**. Similarly, it appears that **positive attributions** of meanings of **'flows'** are **strongly related to** elements of the **social dimension**, whereas **negative attributions** are even more **strongly related to** elements of the **structural dimension** of the network. It is considered that the above conclusions can be considered to be reliable and comparable as the number of objective and subjective elements employed in the attribution model are relatively equal. These results have significant implications as to the cues for investigation which can be used in the network context by both designers and network managers.

In general terms, a **feeling of connection** or **belonging** to the network appears to be **positively influenced by** physical place, or issues related to the **'space of place'**. In contrast, a **feeling of disconnection** appears to be very **strongly influenced by** issues related to the **'space of flows'**. In addition, hierarchical structure and other governance related issues have a strong negative influence on (Px – Py) interactions and appear also to have a strong negative influence on both (P – Ep) and (P – Ef) relationships.

### 7.9.1 Social Connection and Social Presence

It has been confirmed through the NetWorkPlace™ study by virtue of the conclusions drawn from the application of the NetWorkPlace™ Mapping Model that both the 'space of place' and the 'space of flows' are significant dimensions in influencing members' feelings of 'connection' or 'belonging' to the network enterprise at large. The emergence of the *network society* has been made possible by the enormous growth in technology, information systems, and telecommunication infrastructure that is providing increasingly different ways to mediate human interaction. Workplace environments in particular are now characterised by a range of technological devices and mediums which are claimed to increase work interactions by supplementing or substituting for face-to-face interaction (Churchill et al., 2001; Covert et al., 2001). The overwhelming request by the NetWorkPlace™ study respondents for opportunities to increase face-to-face interaction then prompts the question to be asked of: 'how well do these technological devices, mediums, or

systems work', or more precisely in this case, 'how effective is the 'space of flows' in achieving its well publicised objectives'? From the evidence presented, in its current guise and utilisation in the workplace setting, the response must be: 'not very well'!

Face-to-face interaction implies the notion of co-presence which shares properties with spatial presence, that is, being in the same location or space. Goffman (1959: 15) made the point that co-presence "implies the reception of embodied messages" and also that social presence is influenced by subtle properties of the environment in which the interaction takes place. He extends the notion of co-presence beyond "just being in the same place" to include the issue of mutual awareness by suggesting that "co-presence renders persons uniquely accessible, available, and subject to one another" (Goffman, 1959: 22). Addressing issues of what essential attributes are needed to establish connection with others underpins all communication between people and that is a pre-requisite for establishing common ground and maintaining interpersonal relationships (Biocca et al., 2003). It is suggested that the shared behavioural traits such as eye contact, non-verbal mirroring, turn taking, etc. increase the social richness of human engagement and from the findings of this study are essential in establishing a feeling of 'connection'.

It is obvious then that social context and environmental context share at least some level of dependency one upon the other. If as the protagonists of the *network society* suggest, and a cursory glance around almost any contemporary office will confirm, that our workplaces are dominated by activity involving human-computer interaction, enhancing the 'feeling of connection' or 'sense of being with another' becomes a major challenge for architects and interior designers in this context. The design of new social environments must then give greater consideration to the nature of the technology that has become an innate component of both the social and environmental dimensions.

The challenge for designers seems to be one of extending the skill of crafting physical spaces into one that includes how places can support not only face-to-face interaction, but also social interaction mediated by technology (Rice, 1993). The NetWorkPlace™ study has shown that workplace environments must be designed in a manner which facilitates the use of both physical places and electronic media in a way which modulates social presence for a wide range of activities including getting to know someone, exchanging information, problem solving, or simply maintaining relations.



This implies a need for design to aspire to a goal whereby the 'space of place' and the 'space of flows' exist and act in harmony. If the purpose of physical place is to accommodate the activities associated with social presence, then by extension, these places must also support social presence or as argued here, a 'feeling of connection' which is mediated by new technologies between people in different places. In this context the design of physical space, media interface design, and the management of work processes become parts of the one problem. A framework which acknowledges the need for and accommodates contributions from all of these specialised areas in a trans-disciplinary collaborative spirit would seem to provide a solid grounding for both the research and practice of workplace design in the context of the global knowledge economy.

**Proposition 8**

A method of exploration based on trans-disciplinary collaboration is necessary to guide new social and physical environments and their technology interfaces in order to optimise the workplace design opportunities provided by both the 'space of place' and the 'space of flows' in a network context.

### **7.10.0 The New Relationship Between Space and Place**

In discussing spatial functions and forms at the macro level, Castells (2003: 59) suggested that "spatial forms, at least on our planet, will be produced by human action, as are all other objects, and will express and perform the interests of the dominant class according to a given mode of production and to a specific mode of development." At the same time however, he suggested that spatial forms will also be characterised by resistance from what he refers to as exploited classes and oppressed subjects (Castells, 2003a). His concepts suggest that the main impact of the new technology is the transformation of spatial places into flows and channels without any localised form. However at the micro level of organisational life as Mitchell (1999) advocated and the NetWorkPlace™ study has shown, people are culturally defined and oriented and there remains a strong need for them to be spatially concentrated. What the new mode of technological development and information transfer through the 'space of flows' allows is a greater separation of work and management.

Referring again to the macro level, but equally applicable at a micro scale, Castells own observations indicated that now:

“the monopoly held by capital-controlled or state-controlled mass media, as well as the monopoly of information by the technocracy, has generated a reaction by local communities emphasizing the construction of alternative cultures and patterns of communication through face-to-face interaction and the revival of the oral tradition. The tendency towards communication and culture without any spatial form as a result of ..... information flows is being met by the localization of communication networks on the basis of territorially rooted cultural communities and social networks.”

(Castells, 2003: 63)

Whilst the technocrats dissolve place in the ‘space of flows’, people increasingly tend to rely on experience gained in and through the ‘space of place’ as their trusted source of information. As a means of providing closure to this chapter, the reader is referred back to the general framework provided at the outset and further developed during the discussion in an attempt to make the insights gained through the NetWorkPlace™ study and the application of the theoretical concepts integrated throughout, more fully understood.

Harvey (2003) argued that the question of *positionality* (akin to the concepts of ‘position’ and ‘positioning’ utilised in this study) is fundamental to all debates about how to create infrastructures and environments for living and working in the twenty-first century. He suggested that “we cannot understand the events that continue to generate hierarchies of power” and “facilitate the emergence of deep tensions along the major social fault-lines” without contextualising them against the backgrounds of the political and economic transformations now occurring and that we need to both respect and provide for diversification (Harvey, 2003: 104).

His justification for this argument is based on two significant beliefs or values. Firstly, there is the consideration of social justice. Secondly, rationality defined from the standpoint of corporate capital is quite different from rationality defined from the standpoint of the working classes.

History has shown us that rationality is defined by the nature of the social interest group in question and despite the ideological appeal of an egalitarian approach, there is nothing more unequal than the attempted ‘equal treatment of unequals’ in a stratified society (Orwell, 1972; Ritti & Levy, 2003). Discourse based on the dialectic notions of ‘position’ and ‘positioning’ embody expressions of power and as Harvey noted:

“Each ruling class makes laws that are in its own interest, a democracy democratic laws, a tyranny tyrannical ones and so on; and in making these laws they define as “right” for their subjects what is in the interest of themselves, the rulers, and if anyone breaks their laws he is punished as a “wrong-doer”. That is what I mean when I say that “right” is the same in all states, namely the interest of the established ruling class.”

(Plato as quoted by Harvey, 2003: 108)

No society including that epitomised by the NetWorkPlace™ can function without certain forms of social control. Workplace management and practices must seek to formulate and implement the necessary forms of social control without destroying opportunities for empowerment and self-expression.

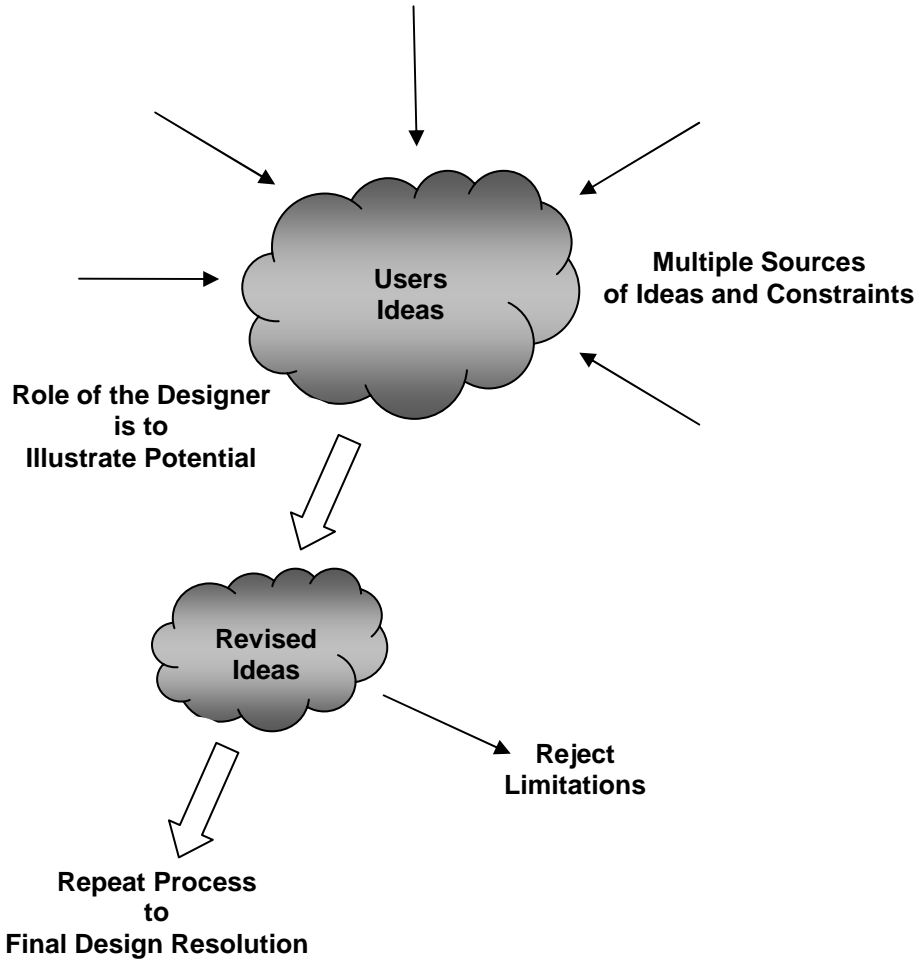
In parallel, the forms of technology and physical workplace design solutions introduced must be supported by and supportive of organisational practices and social imperatives. The challenge appears to be one of creating a coalition between the seemingly disparate interest groups contained in a hierarchical structure through the instigation of alternative orders of discourse and practice which may provide the basis for consensus.

The knowledge economy and the network society have created a context wherein if we are to be effective and have an influence as a profession, it is up to designers to seek ways to break through the institutional constraints which have till now inhibited the potential development of the NetWorkPlace™. This study illustrates that through an integration of technology innovations and retention of the importance and the role of place, there resides some hope. It may be that armed with the insights contained within these pages, future formulations and integrations of flows and place will appear to designers and network dwellers alike to be obvious, unproblematic, and common sense solutions.

### **7.10.1 Refining the Design Approach**

One of the major contributors to contemporary design approaches in relation to the built environment, Christopher Day (2003), suggested that amongst other things, the values, thoughts, emotions, and actions of people are what feed the spirit of place or as previously referred to, the *genius loci*. He pointed out that knowledge can be used as power or as a fertilising enabler and his notion of ‘consensus design’ relies on collaboration between users and professionals to work together in groups in order to achieve cooperative decisions.

The 'consensus design' concept (Day, 2003) is mentioned herein as an exemplar of the many user-focused, collaborative, human-centered design approaches which have been developed over recent times and now are generally considered as normal practice within the design disciplines. Day (2003) suggested that professionals don't know everything, nor do locals, but that once combined, a more holistic knowledge base can be used to inform the design (refer Fig. 7.5). In addition to this, involving people in the physical design process empowers them to shape spaces in ways that resonate with them which is critically different from just delegating design to the professionals.



**Fig. 7.5 The Design Sequence – Towards Consensus**  
 (Adapted from Day, 2003: 124)

The collaborative design approach which aims to achieve consensus is raised here because of the important underpinning principles which strongly reflect those of the socio-technical movement mentioned earlier in this thesis. The common link between the two derives from the involvement of people, the users, whom Day

(2003) claimed undergo a growth process for all involved, empowering them, raising self-esteem, and providing a fulfilling design outcome with some hope for the emergence of a *genius loci*.

The NetWorkPlace™ study has illustrated however that the knowledge economy has generated a complex, dynamic context comprised of both integrated and fragmented organisational groups and even within those, various communities of interest with differing and sometimes seemingly incompatible needs, agendas, and influences.

Assuming that in practice a shared vision could be agreed upon and articulated by the various interest groups in the network enterprise, groups are composed of individuals each with their own world-view and often each with their own pre-conceived version of the 'solution'. Combined with different individual personality traits, commercial and financial constraints, governance and structural impediments, technology needs and preferences, disparate levels of power and influence due to 'position' and 'positioning' discussed previously, the practices of managing and designing for the network enterprise appear as daunting tasks.

No single person, group, or committee can hope to understand every detail of the complexity and potential for chaos presented by the context of the network enterprise. However, parameters for each particular case need to be formulated and a group or individual ultimately given the mandate to make decisions.

At a fundamental level the shift required in both workplace design and research paradigms implied by Spreckelmeyer (1995: 114-115) is "that the task of the architect is more related to traditional definitions of the cultural interpreter, rather than the specialist who solves discrete environmental problems". Spreckelmeyer (1995: 116) concluded that "design and research paradigms which balance the more pragmatic concerns of commercial efficiency and expediency with the culturally specific symbols of work will take on increased significance in the post-industrial age."

Lindahl (2004) proposed that the quality and degree of participation determines the articulation of experiences and thus develops knowledge regarding an organisation's activities. The process of participation, through the articulation of local knowledge, also facilitates the dialogue between individuals at work with outside professionals.

The NetWorkPlace™ study has shown that once problems are understood and underlying reasons identified, we can adapt or create methods appropriate to whatever circumstances and context we find ourselves in. It is thus not the technique *per se* which is the most important aspect, but the recognition of a specific reality and through the application of a compatible philosophy, a solution to the problem can be given form. Different scales of projects may all call for different processes to be invoked. The number of people involved, the size of the site, and the complexity of the problem all influence what needs to be done.

**Proposition 9**

It is necessary to acknowledge rather than deny all the inherent differences within the network enterprise and to then attempt to transcend these through the methodological approach to both research and practice advocated throughout this thesis.

The outcomes of this research demand that in addressing the problems emerging from the knowledge economy, the workplace design process extends traditional approaches to one which is committed to being legitimately both socially and contextually inclusive. Inclusive embodies the requirement that the human interests of all are given credence and consideration, irrespective of their relative 'positions' or locations in the network, together with all of the factors which can be identified as contributing to the context of the particular case.

Beyond this conceptualisation which is intended to be equally applicable in practice, it incorporates the principles which have underpinned this entire research process by being dependent upon a collaborative, trans-disciplinary, multi-paradigmatic framework.

This notion is identified by the acronym of **SCIDA** which embodies all the aspects of a 'socially and contextually inclusive design approach' discussed throughout this thesis. Based on the NetWorkPlace™ study, the following (refer Table 7.10) lists the range of participants recommended by the SCIDA methodology as being potentially involved in the workplace design process in similar network contexts.

**Table 7.10 The Range of Potential Participants in the SCIDA Process**

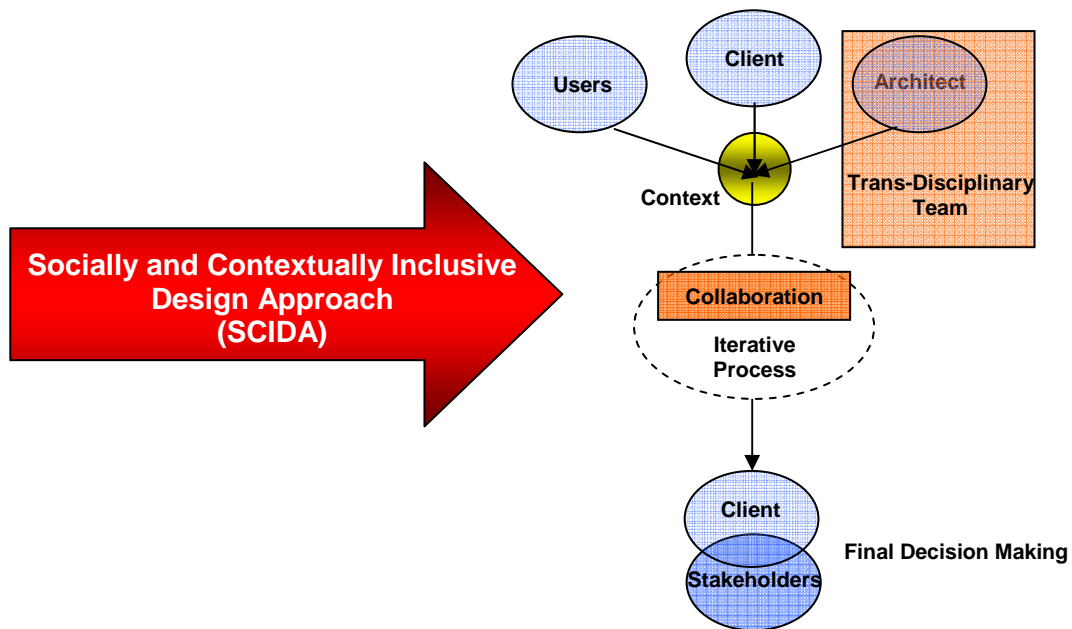
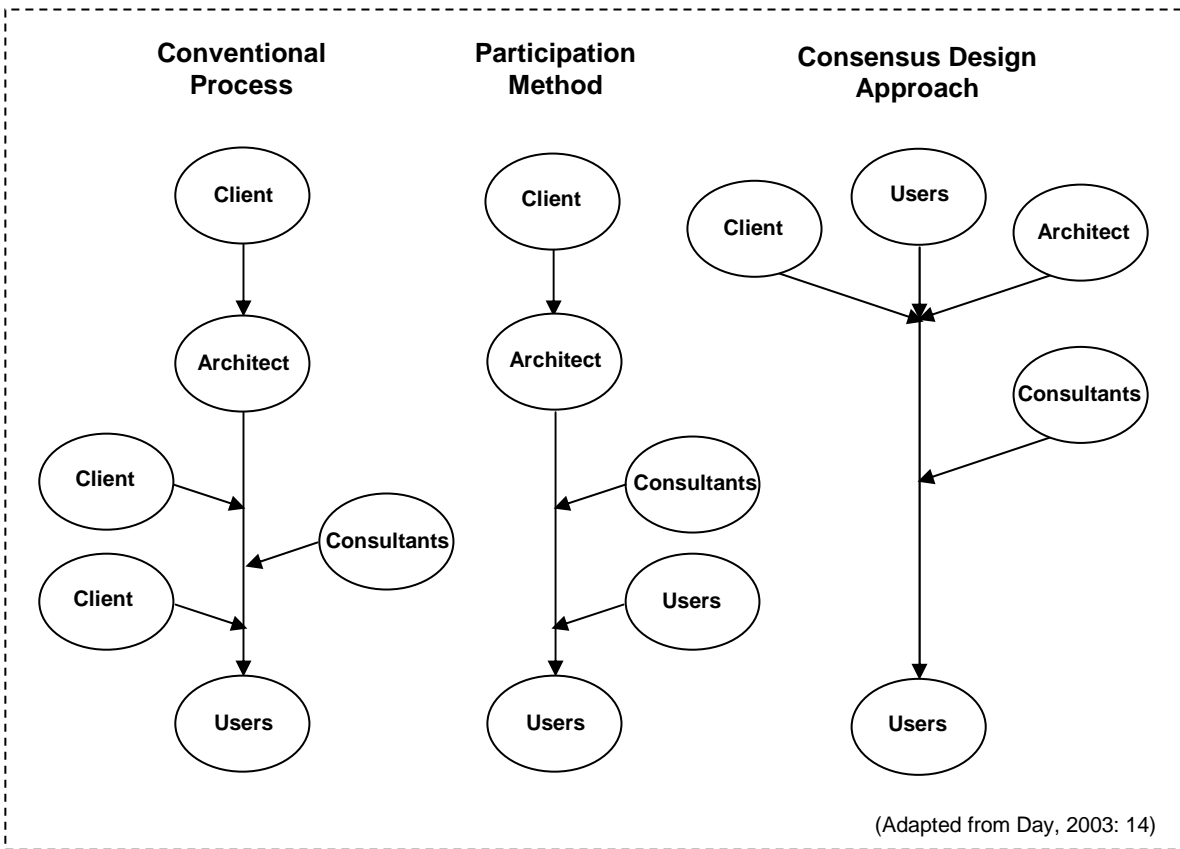
<b>Participant</b>	<b>Definition</b>
<b>Client</b>	generally the management group or representative of the organisation(s) charged with the responsibility of ensuring that the stakeholders goals/objectives are met.
<b>Users</b>	those whom the built facilities are designed to accommodate for the purpose of being-at-work and may include managers, employees, and visitors.
<b>Architect / Interior Designer</b>	the person(s) charged with the responsibility of facilitating and implementing the physical design solution.
<b>Trans-Disciplinary Team</b>	the specialised knowledge group assembled to assess the needs of the project and formulate the solution(s) in a collaborative manner. This may be comprised of professional and/or technical experts and organisational representatives.
<b>Other Stakeholders</b>	those with ultimate decision making power and may include owners, Board of Directors, Government Ministers, and the like.

It is anticipated that through the application of the SCIDA methodology, the important questions raised throughout the design process will be fully articulated and thus able to be comprehensively resolved by the design professions. In very broad terms, these questions may include as a minimum:

- ❑ What is the full nature of the context?
- ❑ Who is involved?
- ❑ When in the process?
- ❑ How are the process components integrated?
- ❑ Whose interests are ultimately satisfied?

The contribution of SCIDA as an extension to traditional processes is driven by an acknowledgement of the complexity represented by the re-defined network context. It aims to ensure that the notion of a fully inclusive, collaborative design process, embodying trans-disciplinary communication and understanding, is an inherent part of its implementation. It further recognises the commercial imperatives and pragmatic constraints in this context of the human-centered, user focused principles, by identifying that an ultimate decision maker (or decision making agency) is involved in the process.

A theoretical representation of the SCIDA methodology is provided following as a comparative illustration against previously documented and published design approach models (refer Fig. 7.6).



**Fig. 7.6 Comparison of Design Approaches and Introduction of SCIDA Methodology**  
 (Developed from representations by Day, 2003)



### 7.11.0 The Bigger Picture

The NetWorkPlace™ study has been discussed in terms of the ‘positioning of power’ (legitimised power) and the ‘power of positioning’ (expert power). This was examined in terms of, at best tension and at worst conflict, between two broad hierarchical groupings each attempting to influence the other or the circumstances within the network. In this relationship, each group becomes either simultaneously or sequentially, an influencing agent and a target.

“Bhaskar speaks of mediating concepts between structure and agency, the position-practice system, positions where individuals act. Agents have a point of contact with structure through the roles they occupy or assume, but also through their situation or context, which can be either problematic or felicitous.”

(Wigren, 2005: 17)

Structure has its own mechanisms and provides reasons for different courses of action to those who are differently positioned, but the structural conditioning of action is never mechanical, and indeed human intentionality is what demarcates agency from structure (Archer, 1995; 2000). Bourdieu’s concept of ‘habitus’ provides further explanation for the linkages which exist between structure and agency through the ability to establish a rationale for action. In the act of being-at-work in the network context, a person does so from a certain position in a given cultural situation and within a given and pre-existent system. The context of our action has structural and social conditions that affect us as individual human beings. The underlying generative mechanisms revealed through the NetWorkPlace™ study have been expressed empirically as culminating in a battle for power and influence, based on opportunities, circumstances, beliefs, and values.

The literature on supply chain and network management is peppered with references to a holistic approach and behaviours which serve the greater good. In view of this, it may be useful to consider power then in terms of the approach discussed by Merton (1957) and even earlier by Kurt Lewin (1952) in his seminal work on group dynamics. Their perspective on the subject was discussed in terms of ‘referent power’, where the target of influence complies because of a sense of identification with the influencing agent, or at least the desire for such identification. It is postulated that in this context, utilisation of relevant and appropriate resources, or what Lewin might term the possibility of ‘inducing forces’, may help to determine the form of influence and ultimately, network agreement and compliance.

In terms of this study, it is suggested that an integrated approach to both physical design and the use of new technology, may be able to constitute those 'inducing forces'. It is speculated then that the 'space of place' and the 'space of flows' have potentially dramatic roles to play in transforming the nature of cooperating individual organisations into legitimate network enterprises. An example of how this may occur resides in addressing issues revealed in the NetWorkPlace™ study in relation to the utilisation of the built environment (space of place) and the new information technologies (space of flows) as interfaces in facilitating greater support of the critical components of the network's structural and social dimensions.

The design of workplaces must be adapted to the ways that the structure and social complexions of organisations are being transformed through the requirements and trends associated with the knowledge economy. Design must correspond to the strategic and operational requirements of organisations both individually and as collaborative partners in the form of the network enterprise and it must be used to both lever and support organisational change. The reshaping of space will rely heavily on new information technologies, not necessarily as the only or the primary cause of change, but certainly as a significant medium to facilitate the transformation and/or creation of workplace settings in the network context. As Alexander (quoted in Mitchell, 1993: 55) was careful to point out, the design approach "is not an end in itself, but rather is a means to an end."

The role that the architect and interior designer needs to play in the workplace design process as a consequence of the network context requires a shift in the traditional methods of investigation and the ways of engaging with clients, users, and trans-disciplinary collaborators. It is obvious from the evidence presented in this case study that for architects and interior designers, the scope of the problem has widened, the depth of knowledge required to provide solutions has increased, and the rules of engagement are required to change to accommodate these. This places a responsibility on the profession at large to be pro-active in promoting the benefits of the design contribution in response to the demands created by the network context. Engagement in the total process will require the practice of architecture to include a capacity to educate and a willingness to be educated.

The findings, contributions, and future research possibilities raised through the NetWorkPlace™ study are reiterated and consolidated in the concluding chapter to this thesis which follows (refer Chapter 8).

Chapter 1 INTRODUCTION

Chapter 2 LITERATURE REVIEW

Chapter 3 METHODOLOGY

Chapter 4 CASE STUDY

Chapter 5 ANALYSIS – Network Dimension

Chapter 6 ANALYSIS – Local Dimension

Chapter 7 THE DISCUSSION

**Chapter 8 CONCLUSION:  
Closing One Door, Opening Another.**

## Chapter 8      **CONCLUSION:** **Closing One Door, Opening Another.**

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### 8.1.0      **Introduction**

This concluding chapter provides a consolidation of the outcomes of the thesis together with an overview of how the research undertaken as the NetWorkPlace™ study addressed the original research question. This question was stated in Chapter 1 as being: **What does the new context created by the emergence of the knowledge economy and the network society demand of the workplace design process ?** Through the introduction of theories on the purported new ways of working and the consequences for working relationships within a re-defined notion of space and place, the phenomenon of the network enterprise emerged. The nature and form of these newly defined organisational entities exposed a need for designers to expand their horizons and to explore ways of approaching the workplace design process in response to changing contextual circumstances and changing organisational forms.

The inspiration for this research was borne out of an identified need to investigate and a professional desire to explore ways of understanding the role of design and that of designers in an increasingly complex corporate and social world. This complexity is characterised by the redefined socio-spatial dimensions emerging from the network context. Such a challenge signalled an omnipresent necessity to reach beyond the traditional realms of architecture and interior design in order to cross boundaries into the realities of 'others'.

The journey began by reviewing the historical development and the characteristics of contemporary approaches to workplace design together with the participative and human-centered design ideals portrayed from both within the profession and externally in allied fields. The impact of the globalisation phenomenon and innovations from the burgeoning information and communications technology industry were also investigated. Ubiquitous connectivity has provided new possibilities for social interaction and a shift in the power dynamics of corporations.

A tension between the 'space of place' and the 'space of flows' was revealed through an exploration of the experience of being-at-work in a supply chain setting,

prompting the relevance and meaning of place in contemporary workplace environments to be re-examined.

## 8.2.0 The Study Overview

The study of a commercially functioning group of cooperative supply chain partner organisations provided the vehicle for examining a case of both the objectively defined structures and the subjectively interpreted meanings assigned to the everyday workplace activities and rituals of members. This case has been termed for the purposes of this dissertation and for future reference as the NetWorkPlace™ study.

The focus of the investigation and analysis throughout maintained a relationship with the dual concepts of the 'space of place' and the 'space of flows' adopted from the theoretical propositions of Manuel Castells (2000; 2004). The methodological position adopted in the study enabled the spatial dimensions to be examined from both within and beyond the confines of a traditional design only viewpoint.

The approach employed suggests a way in which greater levels of understanding can be revealed by gaining access to an increased range of disciplinary perspectives. This work postulates a need for such a pluralist epistemology to be embraced by designers when confronted with the varied and complex settings comprising the 'space of place' and the 'space of flows' as in the case presented.

Facilitated by the NetWorkPlace™ study, an exploration of the expanded context provided by the network enterprise, together with the spatial theories inspired by globalisation and explicated by Castells (2000), has enabled the dominant issues to be revealed. These are outlined overleaf in Table 8.1. Together they provide the basis for establishing the primary considerations required to inform the workplace design process in contemporary network environments. This has been achieved through the multi-dimensional outcomes of this research which are stated to be as follows:

1. Substantive the contextual conditions.  
the structural and social inter-relationships.
2. Methodological a way to interrogate the phenomenon.
3. Theoretical the formulation of propositional statements  
and models.

**Table 8.1 The Dominant Network Issues**

Issue	Description
<b>Place</b>	how the 'space of place' was valued and controlled by management, and utilised by operational staff, within the network revealed that a hierarchical model of organisational management prevailed despite theoretical concepts suggesting the contrary. This evidence confirmed that power and influence in physical space terms was still wielded predominantly in a top-down manner. Lack of control and autonomy at the operational levels resulted in a consequent attitude of apathy towards space and office accommodation issues being dominant.
<b>Information and Communication Technology</b>	imposed bureaucratic systems intended to ensure standardisation, compliance, and a restriction in access rights dominated the network enterprise. Implementation was undertaken by management and maintained by the technocrats. Isolated feral systems within the operational levels were common and used most often to protect the ownership of knowledge, the distribution of information, and as a way of avoiding enterprise control mechanisms.
<b>Social Interaction</b>	the belief by management that communication facilitated remotely via technological means through the 'space of flows' could both enhance and substitute for individual interaction was strongly contested. Personal face-to-face contact in co-present physical places was stated overwhelmingly as being highly desirable by the majority of operational staff. Ironically, it was also acknowledged by the majority of participants in management levels as a highly beneficial condition.
<b>Governance Structures</b>	the inhibiting nature of incompatible legislative domains, hierarchical regimes, and bureaucratic processes symptomatic of the individual organisations comprising the network entity were shown to be major obstacles to the development of the network enterprise model. Such characteristics were in complete contrast to the ideals portrayed through the theoretical concepts described in the literature.
<b>Power Dynamics</b>	the notion of cooperation and collaboration between network partners and between organisational members, contradicted the ideals commonly espoused through the literature. This was evident in the differentials exhibited between the exercise of hierarchical privilege activated through management practices; and that enabled by the possession of information, technical knowledge, and physical location facilitated by social network activities and relationships; within the organisations and alliances which constituted the overall network.

The issues revealed through the process of discovery are reconfigured and presented below as the significant findings of the NetWorkPlace™ study:

1. The structural components of the network, specifically the governance incompatibility, the hierarchical and bureaucratic nature of the management style, and the imposed standardised enterprise-wide information and communication technology system are in conflict with the theoretical ideals. They are therefore potentially inhibiting the effective functioning of the network and its supporting mechanisms, in this case the design of the workplace.
2. The social functioning of the network relies heavily on personal contacts, the selective sharing of tacit knowledge, and a desire for much greater face-to-face interaction facilitated through the design of workplace settings which provide such opportunities.
3. The spatial policies and management practices in relation to workplace design are standardised, restrictive, based on hierarchical allocations, and dominated by an overbearing emphasis on security. The 'space of place' is currently viewed as a cost to the individual organisations rather than an opportunity to support operations and interaction, and is generally perceived as something related to status rather than function.
4. The 'space of flows' is dominated by standardised systems which are in the main ineffective and don't produce the outcomes they are designed for. Existing in parallel, are an unknown number of feral systems which appear to be effective within small group cohorts, but are isolated and uncoordinated.

The study findings ultimately enabled an understanding to be constructed through the person-person-environment interactions by identifying the major impacts and influences within the network and how these related to the environmental contexts of 'place' and 'flows'. This was revealed through an examination of the objective structural dimensions, and the subjective 'talk' relating to how respondents felt they were oriented within the network hierarchies, together with their perceptions of the value of group membership and their sense of connection to both the organisational or network entity and to place.

What was most apparent was the means through which the power bestowed by managerial position was often used to attempt to impose and/or maintain control whilst at the same time, tacit knowledge and social networks created an alternative

form of power for those within the operational group. Such power enabled them to avoid compliance with organisational and network protocols and systems.

This can be characterised as a state of tension or conflict between those, who by reason of their assigned status are 'in authority', and those who by nature of their knowledge and connections are considered to be 'an authority' in a particular area of practice or production. For the purpose of the research undertaken this is expressed as the 'power of position' and the 'power of positioning'.

By reference to Pierre Bourdieu's (1990) concepts of *field* represented by the network structure with its dominant power regime, and the concept of *habitus* as the way members negotiate the construction and on-going maintenance of a social order, an understanding of 'positioning' was developed. 'Power of position' in this sense relates to the way hierarchical power of management is used to dominate those at the operational levels, and also how specialist knowledge, the possession of or access to particular information, and particular physical location in the network can be used to usurp the authority or influence of higher ranked hierarchical positions.

The concept of 'positioning' is extended in relation to members' sense of connection which is manifested in and through both the physical 'space of place' and the notional space between, the 'space of flows'. As is revealed in the study through the 'positioning' argument, there appear to be parallel 'organisational' tensions existing between the network's embodied 'space of place' and the 'space of flows' which have implications for the effective utilisation of physical spaces and places and the implementation of appropriate technology applications.

An examination and evaluation of the 'Local Dimension' (termed 'The Case Within' the NetWorkPlace™) consolidated the argument for the apparent 'disconnect' between spatial issues and managerial policies, signalling that finding solutions to contemporary (workplace) design problems is not confined to the acts and expertise of designers alone. It has been firmly established that the problems are also embedded within and influenced by the attitudes, values, and practices of the management discipline and the information technology discipline. This confirms the need for collaboration and a trans-disciplinary approach to workplace design in this context.



Further to this, the issue of ‘power’ and ‘positioning’ in relation to the whole of the design profession and its capacity to operate effectively in contemporary workplace contexts is brought into question. It is proposed through the realisations of this comprehensive study that designers need to engage with the stakeholders in the workplace design process from a strategic rather than the conventional service provider standpoint. This suggests a subtle shift in the application of the designer’s expert knowledge, but a somewhat larger leap in the ‘terms of engagement’ initiated or entered into by the profession.

### **8.3.0 The Contribution to Knowledge**

Informed by the NetWorkPlace™ study findings and through:

- the understanding of what people do, and which people do what within the network,
- the identification of impediments to the ways network members can engage and the interventions relied upon in order to overcome obstacles and barriers as the means to achieving their ends, and
- the proposal of the concepts of ‘position’ and ‘positioning’ as a way of describing and understanding the power dynamics, tensions, and inherent conflicts within the network,

the following constitutes the significant contributions of this research to the current body of knowledge in terms of:

#### **Substantive Area of Workplace Design:**

- The need for designers to engage with stakeholders at all levels and to collaborate with other relevant disciplines in order to reveal the unique characteristics and specific demands of the network context has been established. A way to achieve this has also been developed through the NetWorkPlace™ Application Framework. This ensures that the understanding required to capitalise on the utilisation of the ‘space of place’ and the ‘space of flows’ in a balanced manner is made explicit so that the opportunities provided by advanced technology can be harnessed in a way which gives primacy of place to both human and commercial imperatives. The opportunity then exists to more adequately explore new design possibilities and/or to test the application of existing typologies in the redefined context of the network enterprise.

## **Methodology:**

- The adoption of a pluralist ontology and the reconfiguration of approaches from the traditional paradigms into a collaborative, trans-disciplinary, multi-method epistemology provides an explicit and replicatable method of investigation. This enables access to be gained to the additional information and insights required to inform the design process in the new workplace context which has emerged from the tension created between the 'space of place' and the 'space of flows'.

## **Theoretical Models:**

- Through a robust academic approach to the exploration of a functioning commercial case study phenomenon, the research process has enabled the development of the NetWorkPlace™ Application Framework (refer Table 8.2) to be achieved. The framework is comprised of a suite of investigative models, tools, and techniques. These are applicable to both design research and practice in the network context, as either a complete framework or as practical stand-alone tools where appropriate.
- Further to this the framework constitutes a point of reference which provides a basis and a common focus for the various disciplines and stakeholders who have different viewpoints, to engage in meaningful and productive discourse on the topic of workplace design in the network context. This will provide benefits in terms of designers' and the design professions' ability to 'engage' with 'others' and to adopt a leadership role in addressing issues in relation to the network context. It is unlikely that further development and progress in this area will be achieved from a trans-disciplinary perspective if reliance is placed on the continued use of jargon and language specific only to particular fields or areas of expertise.
- The overall contribution of this work is further illustrated in the expansion of the notion of designing in relation to context. A full explanation of this concept is provided in association with the illustration of the SCIDA Model (refer Fig. 7.6). This was developed through the issues revealed by the NetWorkPlace™ study as an extension of the contemporary approaches to the design process articulated by modern-day practitioners of whom Christopher Day (2003) is used as one exemplar.

In essence, the model conveys the idea that the workplace design process in the network phenomenon fully accounts for the organisational issues in their social context whilst giving equal consideration to the social issues as seen in their organisational context, that is, there is a mutual interdependence or influence acknowledged. It is important also in that it is 'inclusive' in terms of the necessary investigative resources and sources but in the end acknowledges that in a commercial context, the final decision makers are the stakeholders, usually those bearing the greatest level of risk or with the largest financial investment.

It is envisaged that these contributions will be of value to not only the design disciplines, but that they also have the potential to influence thinking, future theory development, and practice in the disciplines of organisational and network management, and in the information and communication technology field, both areas with a stake in the outcomes of workplace design.


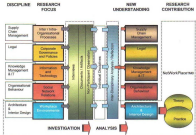
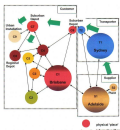



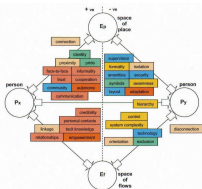
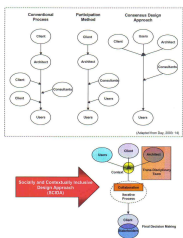
This thesis has established that future processes will be required to deal with the fluidity and ambiguity characteristic of the network context. The NetWorkPlace™© Application Framework (refer Table 8.2) is proposed herein as a model of such a process.

#### **8.4.0 The NetWorkPlace™© Application Framework**

The NetWorkPlace™© Application Framework (refer Table. 8.2) consists of a number of concepts and techniques developed specifically throughout the investigation and analysis phases of this research program. It provides a way to gain understanding of the context which has emerged as a direct consequence of the network phenomenon.

The framework is comprised of a collection of integrated models and techniques designed to be used in combination or as individual tools. Collectively, they provide a holistic approach to a way of interrogating the NetWorkPlace™© context. Of particular importance, is the fact that the individual components of the framework are equally applicable and adaptable to both the research and practice domains.

**Table 8.2 The NetWorkPlacem™ Application Framework**

	<p><b>The NetWorkPlacem™ Trans-Disciplinary Investigative Model</b> (Refer Fig. 4.6)</p> <p>Purpose: Identification and illustration of trans-disciplinary investigative streams and overall contextual setting.</p>
	<p><b>The NetWorkPlacem™ Collaborative Process Model</b> (Refer Fig. 4.7)</p> <p>Purpose: Articulation of trans-disciplinary collaborative research process.</p>
	<p><b>The NetWorkPlacem™ Network Diagram</b> (Refer Fig. 4.8)</p> <p>Purpose: Representation of research context comprising physical settings and social network interactions.</p>
	<p><b>The NetWorkPlacem™ Interaction Matrix and Process Chart</b> (Refer Table 4.2)</p> <p>Purpose: Representation of all interactional relationships and description of 'actual' tasks performed (extended to include required levels of detail depending on complexity).</p>
	<p><b>The NetWorkPlacem™ 'Network Dimension' Analysis Process</b> (Refer Fig. 5.2)</p> <p>Purpose: Representation of the process of coding or distilling data from interview transcripts into assigned units of meaning and the identification of significant factors.</p>
	<p><b>The NetWorkPlacem™ Thematic Analysis Framework</b> (Refer Fig. 5.4)</p> <p>Purpose: Representation of both objective and subjective dimensions together with the major issues interpreted through the detailed analysis process.</p>
	<p><b>The NetWorkPlacem™ Mapping Model</b> (Refer Fig. 7.5)</p> <p>Purpose: Interpretation of network issues (constructs) translated into P-P-E relationships in order to comprehend the influence of and/or the impact of the 'space of place' and the 'space of flows' on network interactions.</p>
	<p><b>Comparison of Alternative Design Approaches and Introduction of SCIDA</b> (Refer Fig. 7.8)</p> <p>Purpose: Illustration of alternative conceptions of the design process as compiled by Day (2003) with the inclusion of the variation comprising the SCIDA model.</p>

This approach is inspired by what Checkland and Scholes (1991) described as the placement of an intellectual framework into a situation of concern. It reflects partially the 'mental model' concept argued by Senge (1990) as the basis for all interpretation of perceived reality, but is extended beyond a mere simplification or generalised representation of a single reality. A critical component of the framework is the NetWorkPlace™ Mapping Model (refer Fig. 7.4) which advances traditional ways of representing the person-person-environment relationship by extending the context to include both the 'space of place' and the 'space of flows'.

The NetWorkPlace™ Application Framework (refer Table. 8.2) is proposed herein as a form of ideological superstructure which provides the basis of a way of achieving a holistic perception of workplace realities and social order created within the knowledge economy and network society context in order to inform the workplace design process. The overall framework enables the investigation of the NetWorkPlace™ to provide a way to unravel the complexity presented by this and similar contexts and thus reveal the nature and particulars of both the objective and subjective aspects of the workplace environments and the activities therein.

Based on data and outcomes of the NetWorkPlace™ study, it is postulated that a particular work group that conforms to or complies with policies and imposed systems could be described as accepting of an objective workplace reality (to some degree). Thus the ideas of management and operational levels are likely to be compatible with a consequent low level of tension existing between the two. In such instances, corporate standard information technology systems and universal style workplace design solutions are likely to be the norm.

Conversely, work groups who display strong incompatibility of ideas with the reigning management dogma and are characterised by a proliferation of feral technology systems and a much more unconventional style of working and workplace design arrangements, could be described as existing in a much more subjectively constructed reality resulting in a high level of tension being created between management and operational levels.

This interpretation is based on the notion that nothing is ever completely objective or completely subjective, between these extremes a variety of combinations are likely to exist. The workplace realities of members are thus organised, contrived, or manipulated depending on the 'power of position' or the 'power of positioning' capacity of the various members. It is precisely the understanding of this 'power'

and 'positioning' relationship which provides the means by which the sense-making of organisational members is revealed, the multiple realities are made apparent, and the consequent appropriate design treatments and interventions are able to be applied in terms of the 'space of place' and the 'space of flows'.

As has been revealed through the process of the NetWorkPlace™ study, this understanding can be achieved for designers by applying the suite of tools and techniques comprising The NetWorkPlace™ Application Framework (refer Table 8.2). The individual elements or components were formulated as direct outcomes of the investigative and analysis phases of the study and accordingly have been discussed and illustrated in detail previously in this thesis. The 'Framework' has thus been developed to a point where it is readily applicable in practice for the purpose of achieving design process enhancement in a network context.

Further to this, in conjunction with the SCOP project, the 'Framework' tools and techniques have been shown to have the capacity to provide the means for common understanding to be reached across disciplines. It is therefore anticipated that it will also prove to be adaptable to other disciplinary problems within the context described and may be further adapted to suit other design contexts and circumstances.

One specific example of where such wider application of the 'Framework' may apply, relates specifically to the stated action agenda of the building and construction industries. In offering a seamless provision of all factors in the building procurement process; including financial services, real-estate transactions, project management, development management, and ultimately facilities management; the network characteristics typical of a supply chain context are obvious.

In addition to the potential practical applications as outlined above, The NetWorkPlace™ Application Framework provides a robust platform for undertaking future research within the design disciplines and across allied or related fields.

### **8.5.0 Challenges Posed by the Research Outcomes**

This thesis has outlined the emergence of the network enterprise and the investigation has signalled a need for workplace designers in this context to expand their methods of inquiry. It has suggested a way to go about this process through the establishment of a robust framework and the development of a suite of tools

applicable to both the research and practice domains. This will inform the workplace design process specifically, and in more general terms, facilitate the advancement of professional knowledge through research, application, and collaboration.

The following insights from the NetWorkPlace™ study are included to assist in the considerations required to be embraced by designers in order to confront the problems associated with workplace design in a network context:

- ❑ The trans-disciplinary approach presents a vehicle for richer and deeper understandings of both the interactions across the network and the organisational impacts on the design process, in a context characterised by the 'space of place' and the 'space of flows'.
- ❑ Workplace design, through the parallel consideration of the 'space of place' and the 'space of flows' appears to have the potential to balance tensions between the competing power dynamics contained within organisational hierarchies, which are inherently part of and exposed through the social system.
- ❑ Designers cannot provide all encompassing workplace solutions or revelations in isolation, there must be a corresponding alignment of technology implementation, management practices, and a consideration of the policies which provide authority to use the 'space of place' and the 'space of flows' in ways which support the social order created by members.
- ❑ The NetWorkPlace™ phenomenon has highlighted a challenge existing for architects and interior designers to find ways and opportunities to engage with a wider audience consisting of client stakeholders and other disciplinary professionals, to find common grounds and to establish both a basis for and a means of discourse in relation to the workplace design process in a network context.

Claims in the supply chain management literature about networks engaging in transparency and cooperative information exchange, collaborative planning, and technological and management system integration, appear still to be ideological goals not being fully realised in practice. It is posited that a process modelled on the NetWorkPlace™ approach could facilitate an alignment between governance and

operational structures, between management expectations and practices, and between the physical workplace environment and information and communication technology systems. Such alignment may help the network entity to be a more humane 'place' to be-at-work, together with contributing to it becoming a more efficient and successful market innovation in terms of commercial enterprise.

The globalisation phenomenon has shown that architects and workplace designers must become much better social investigators, better at anticipating or recognising commercial trends and prepared to seize the opportunity to be part of a holistic transformation process. To be followers surely is the way to invite redundancy, or at the very least a devaluation of skills and a lost opportunity to promote the value of design. If workplace design is allowed to remain within and constrained by an exclusively political and economically driven framework, the social priorities and functional possibilities of design, and thus a large portion of architecture's purpose and process, will decline and perhaps even disappear.

### **8.6.0 The Inter-Connectedness of Knowledge**

The NetWorkPlace™ study brings a realisation of the inter-connectedness of knowledge and understanding. Much of the complexity of real-world problems are multi-disciplinary human issues in nature and can only be resolved by working together. It is proposed that design can be 'the meeting point' to bring together the problems of widely differing disciplines, but this will only be possible through a collective willingness by the profession to engage with 'others', together with an acceptance by 'others' that the design professions have the ability and the capacity to make meaningful contributions.

Obviously design and organisational management are distinct professional activities however a greater epistemological alignment between the two is required in order to progress the development of workplace design and to deliver the associated benefits to both management and employees in the network context. It is posited that the processes, models, tools, and terminology developed throughout the NetWorkPlace™ study and presented herein will facilitate that purpose for both research and practice.

Some confidence can be drawn from Mitchell's (2003: 210) assertion that "the death of distance that prophets of telecommunication have repeatedly promised does not, as it turns out, destroy the power of place: local cultures and advantages still



matter.” There is no doubting however that workplaces must adapt to the evermore complex and dynamic patterns of usage demanded of the network society, facilitated largely by the technological revolution. Within this new context it is the way that fixed locations are utilised and integrated with the interfaces between the ‘space of place’ and the ‘space of flows’ which is the designer’s domain. Workplace design cannot be limited to remain exclusively within its traditional boundaries.

### **8.7.0 The Collaborative Process in this Case**

The genesis of this research initiative began with the formation of an alliance between the NetWorkPlace™ study being undertaken as part of my PhD program, and the industry based SCOP project involving research into supply chain management innovation. In such a collaborative partnership there was always the potential for conflict to arise between the industry agendas and the academic goals because of the inherent diversity in nature of differing objectives.

Academic research is traditionally oriented toward explanation and/or theory generation whilst industry projects are often oriented towards a quick-fix, operational solution. In this case however, once a team consensus was established, all objectives were able to be negotiated and comfortably aligned within the project framework. This ensured that both industry relevance and academic rigour were prime agendas of the research effort from the outset.

Based on a consideration of the difficulties in integrating multi-disciplinary teams of researchers, Knights and Wilmott (1997: 21) concluded that they were “less than optimistic about the prospects of interdisciplinary research.” This was echoed by Newell and Swan (2000) in their attempt at inter-disciplinary research involving both academic researchers and industry partners. They referred to the inclination towards ‘mechanistic pooling’ pointed out by Knights and Wilmott (1997) whereby each member of the research project takes their ‘slice’ of the work away and proceeds with minimum communication between members. They also agreed with Burgoyne (1994) that such a response is better described as multi-disciplinary as distinct from inter-disciplinary research.

Such was not the experience of the NetWorkPlace™ study however. Throughout the research effort a genuine attempt was made by the various disciplinary contributors to learn from the others involved and to incorporate that knowledge into their thinking and their evaluations and interpretations. This appears to have

continued at least in the immediate aftermath period wherein the SCOP project researchers have commented to each other that they are “*now looking at old problems with fresh insights.*” This provides an optimistic outlook for the possibilities of trans-disciplinary research.

The recent literature across a very broad range of research and practice advocates the need for collaborative inter-disciplinary research to be undertaken. However there appears to be a paucity of successful examples and even less published on how to go about such research collaborations. This comment is in no way intended to imply that there are none, but it seems more relevant at this point for this thesis to elaborate on the learnings from the NetWorkPlace™ study in particular and in that way provide a concrete contribution to the future direction of contemporary research methodology.

This case study illustrates the benefits of collaboration across disciplines and of the partnership between practitioners and academics in conducting a research effort to investigate the complexity and multiple realities of the network enterprise context. Successful trans-disciplinary research indicates that (similar to the comments made by operational staff who participated in the study), ‘*learning on the job*’ and taking advantage of the almost osmosis-like effect of working with others has great potential to enrich research outcomes and enhance individual skills.

What was paramount in underpinning the specifics of this particular collaboration however was a coherent view of practice, of research, and the relationship between the two domains. The contributions were in this way instrumental in establishing and maintaining a dialogue between the research and practice partners which has the potential to go beyond this specific research project. Collaborative research in such a partnership arrangement between academics and industry practitioners proved capable of building an awareness that researchers are actively contributing to improved professional practices. This case in turn can only progress the reputation of academic relevance within industry and is likely to make future collaborations easier to establish.

What emerged from the different perspectives through the on-going reflective and iterative processes, continued to drive the research interaction amongst the team and maintain the momentum of the process. This built a shared reality which the research collaborators now believe is a pre-requisite for decision making in the overall research process. Throughout the duration of the experience, the study took

on the complexion of a collaborative learning cell for the researchers and industry practitioners involved, each discipline informing and being informed by the others. This provided the opportunity for continuous meta-process improvements to be identified and implemented, and in this respect is research mirroring practice.

**Table 8.3 Lessons Learned from the NetWorkPlace™ Collaboration**

Condition	Description
Membership	The research team consisted of members from diverse backgrounds with a range of professional and technical skills. The members needed to be able to work together as well as independently at various stages of the research project.
Framework	The research team was able to agree on a theoretical framework which suited the disparate research perspectives and thus had common parameters and a consistent frame of reference.
Integration	There was an integrated approach through the development of project plans and the implementation of project management techniques to monitor and control the research process, and to maintain a repository for the collective memory of the project. There were regular face-to-face meetings to ensure that the team was building on what had been agreed and that emerging discoveries were being incorporated.
Ideology	There was no apparent tension between the members of the research team which potentially could be created by ontological and epistemological differences. It appears that a team which fully acknowledges the legitimacy of paradigm-interplay is able to negotiate around ideological differences and this condition is considered to be of paramount importance if the research outcome is to be enriched rather than compromised because of personal differences and ideals.
Connection	The experience of this case suggests that both a personal connection between (even if only temporary) and a professional commitment by all members is essential. Even with what might seem to be ideal connections, processes to negotiate differences and disagreements need to be agreed and implemented. This may be correlated with issues of trust which are far too complex to discuss further at this point but are noted because of their significance. In this instance the researchers had experienced similar cultural norms and developed a sense of collegiality. Together with being able to build bonds with the practitioner members, trust and commitment were developed quickly and were maintained through a desire to reach common objectives.
Sharing	The capacity, ability, and willingness to share information and knowledge is paramount for joint knowledge creation. Mechanisms to either isolate or share 'intellectual property outcomes' require specific consideration which rely heavily on a level of trust between team members and which ideally are consolidated contractually.
Consistency	The difficulty experienced in maintaining consistent team membership over a prolonged research project and replacing members where necessary with persons of compatible skills and personalities may prove to be problematic due to the transition period required to bring new members up-to-speed, potentially delaying the project.
Culture	Although not a problem within the SCOP team, the 'clash of cultures' between academics and practitioners was experienced somewhat through demands made by the organisational and network managers requiring quick-fix solutions. These were negotiated and ultimately managed through regular reporting to the host project organisation management team and is recommended as good practice in the maintenance of amicable and supportive relations.

The lessons learned from the NetWorkPlace™ study indicate that certain conditions need to be in place for collaborative research to be successful. Based on this experience, an outline of the suggestions considered relevant and transferable to other collaborative research efforts is provided above (refer Table 8.3).

### **8.8.0 Future Research Possibilities**

The limits applying to a single case study such as the inability to generalise to a wider population, together with this case being restricted to specific organisations and industries within an Australian setting and thus potentially influenced by particular cultural norms, do not minimise the impact that the findings of the NetWorkPlace™ study have revealed. Despite such limitations, significant issues emerged which have the potential to provide a range of future research opportunities. Importantly, these highlight the inter-relationship between design and other disciplines.

Firstly, the structural issue of governance in relation to organisational alliances in their various forms and industry combinations needs to be much better understood. This is necessary in order for the supporting mechanisms such as workplace design to be able to facilitate the synergistic interactions necessary in a network entity. Such studies could have a significant impact on management practices.

Secondly, the types and forms of information and communication technology systems which are adopted by networks, or alternatively, how independent organisational systems can be integrated, need to be fully comprehended by designers. This must encompass information transfer, data recording, the protection of privacy and probity issues, facilitation of social interaction, and interfaces with the physical environment.

Thirdly, and perhaps a far more challenging proposition, is the further exploration of the social factors which shape network interactions, the nature and means of information exchanges, and the consequent physical environments necessary in order for a balance between the 'space of place' and the 'space of flows' to be achieved.

The proposition put forth at the conclusion of this Section (refer Proposition 10), concerning the need for designers to fully comprehend the contextual issues

presented by the concept of the network have been firmly established in both empirical and theoretical terms.

It is postulated at this point, as a result of the NetWorkPlace™ experience, that future forms of contextual research in the architectural domain must be characterised by a willingness to engage in collaboration of a trans-disciplinary nature. It is further suggested that the NetWorkPlace™ study provides a point of departure by extending traditional paradigms and challenges other architectural researchers to explore frameworks that not only help to inform the design professions, but may also assist in influencing research and practice in other fields.

The time may well be ripe for, and in fact the very survival of the architectural profession may be dependant upon current incumbents taking up the responsibility to widen both the topics of design research and the methods of inquiry adopted. The findings of this research program have come from a single case study investigation and therefore any claims made at this stage can only be speculative. However, anecdotal evidence suggests that identifying other examples of organisations and networks with similar structural and social dimensions would not be an overly challenging task.

This thesis represents a comprehensive documentation of the initial steps of discovery taken within a networked organisational setting. It attempts to understand the implications for designers confronted by the imposition of a re-defined socio-spatial logic introduced through the 'space of place' and the 'space of flows'.

These concepts have been transposed from a meta-theoretical level to a specific functioning example of networking in action. This is a necessary transition from their 'global' application in order to understand an example of the 'local' implications. The various 'propositions' formulated throughout the discussion component of the thesis are consolidated following in a single table (refer Table 8.4) as a means of providing cues for future associated research initiatives.

In summary then, the possibilities for future projects emanating from or inspired by the NetWorkPlace™ study research are multi-dimensional. This is appropriate as it reflects the underlying philosophy which drove the investigative approach and the final outcomes reported upon in this thesis.

**Table 8.4 Propositions Arising from the NetWorkPlace™ study**

<b>Proposition 1</b>
The challenges posed by the emergence of the network enterprise have exposed an urgent need for architectural design theory and processes to engage with management thinking and theory in ways which can be appropriately transformed into practical physical outcomes.
<b>Proposition 2</b>
An effectively functioning social system appears to be capable of overcoming the structural incompatibilities and impediments attributed to competing corporate governance regimes in a network enterprise context.
<b>Proposition 3</b>
A trans-disciplinary, collaborative approach is an essential ingredient in the establishment of network structures and relationships in practice.
<b>Proposition 4</b>
In order to achieve a position of mutual understanding, a common language and means of communication needs to be established so that the trans-disciplinary contributors to the development of the network are able to share knowledge and to engage in meaningful discourse.
<b>Proposition 5</b>
Governance, technology, and social interaction supported by the design of the physical workplace constitute the most significant factors impacting on the network function and these factors are inter-dependent and inextricably entwined.
<b>Proposition 6</b>
Only through a thorough investigation and full understanding of the 'contextuality' of the case in question, can the 'space of place' and the 'space of flows' be implemented and integrated in a way which enables one to complement the other.
<b>Proposition 7</b>
It is the connections within the social system and the enablement of these through user-acceptable technological systems and interfaces, integrated together with design that supports physical face-to-face interaction which are more likely to hold the key in transforming the feral flows and the deviant places revealed in the NetWorkPlace™ study.
<b>Proposition 8</b>
A method of exploration based on trans-disciplinary collaboration is necessary to guide new social and physical environments and their technology interfaces in order to optimise the workplace design opportunities provided by both the 'space of place' and the 'space of flows' in a network context.
<b>Proposition 9</b>
It is necessary to acknowledge rather than deny all the inherent differences within the network enterprise and to then attempt to transcend these through the methodological approach to both research and practice advocated throughout this thesis.

In conclusion it is postulated that the foremost consideration is as stated following:

<b>Proposition 10</b>
Workplace design in networked organisational settings needs to be about understanding 'context' and 'collaboration', and about understanding the associated 'processes' and 'politics' in order to successfully 'do design'.

In addition to the explanations provided herein to the original research question, an invitation is extended to all disciplines to build upon the work already completed. This can be done by similarly engaging with the realities of the network context and by collaborating with the architectural discipline in the quest to create the types of environments which enhance our living conditions. This is after all, a primary motivation in being a designer

### **8.9.0 The Final Word – For Now !**

This research has contributed to the design field in substantive, theoretical, and methodological terms. The outcomes may comfortably sit beside or complement the results of other studies from the fields of supply chain management, organisational management, network relations, information and communication technology, various areas of the social sciences, in addition to those specific to architecture and interior design. As a single, stand-alone case study no wider generalisations can be drawn, however it does provide some revealing findings which may be applicable to similar settings and useful in formulating future hypotheses.

Its significance however resides in the attempt to understand the implications for designing in a new and challenging context and in so doing, underlines the relevance of a 'contextual' approach to contemporary design. Further to this, it provides a unique 'way of investigating' the topic area through the combination of traditional methodologies utilised and the development of new methods and tools which are applicable to both research and practice. Finally, it highlights the importance of trans-disciplinary collaboration in dealing with the multi-layers and complexity of the contemporary social world and modern day practical situations.

This research has shown that power and positioning are determined not just hierarchically or locally but by the configuration of the network as a whole. Until a more equitable balance between the power of position and the power of positioning is achieved within the network enterprise, it seems unlikely that either of the widely promoted benefits related to spatial design or technological innovation can be delivered effectively.

Before physical design and technology systems can help to facilitate a more autonomous, egalitarian network entity, the current forces of power which tend to enslave members irrespective of their social position or positioning, needs to be moderated at the very least. If the current environment exposed by this research is

at all indicative of the broader picture and the complexity of being-at-work in a contemporary network enterprise, it is obvious that the challenges associated with workplace design cannot be confronted in isolation.

It is perhaps too idealistic to expect that all of the necessary components can be perfectly aligned, it is after all far from a perfect world to start with. It is not too much to expect however, in fact the insights gained from this research demands that designers become part of a larger process. It is appropriate that the profession takes the initiative in leading a holistic, trans-disciplinary approach to workplace design. It is also apparent that for architects and interior designers to be effective in manipulating the 'space of place' and the 'space of flows', the total context of the network must be understood and articulated. Clarke (2003: 30) suggested that "in all epochs, whatever the significance of his or her role, the architect has been subject to the 'reason' of those in power." This should not diminish our responsibility as a profession to initiate design solutions which lead to environments that provide for and support human fulfillment, not just architecture that simply accommodates human existence.

As a point of closure it seems timely to reflect on Bourdieu's (1991: 374) reference to Max Weber's (1978) insight that "in the art of warfare, the greatest progress originated not in technical inventions but in transformations of the social organization of the warriors." The NetWorkPlace™ study reinforces the perception that the spaces and places within which contemporary commerce and corporate life are lived out can indeed often resemble a battleground. The final words of this dissertation convey an outcome of the research which this author is convinced need to be adopted as a mantra by architectural researchers and practitioners alike:

*The profession must become an arena of discourse that engages with, and beyond itself. This can begin in our schools, in our studios. But it cannot end there; the discourse must become architecture.*

(Clarke, 2003: 42)



## Appendices

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Appendices are numbered relative to the Chapter to which they relate.

## Appendix 3.1

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### Qualitative Research Basics as Applied in this Case

Qualitative research is described as being concerned with first-hand encounters within a specific context and it acknowledges the role of interpretation in the collection and presentation of data (Creswell, 1994; Miles & Huberman, 1994). In essence, the qualitative approach seeks to describe or explain socio-physical phenomena within complex contexts and to consider the relevant phenomena in a holistic manner.

Qualitative research commonly deals in the 'subjective' interpretation of contemporary social situations and particular emphasis is placed on the role of the researcher as a part of the research outcome. In this sense, it is very different for example, from experimental and correlational research, both of which assume an 'objective eye' on the part of the researcher. Qualitative research in complex social and cultural settings has traditionally adopted a philosophical stance wherein 'pure objectivity' is impossible. This however has not been seen as being problematic for social science researchers who posit that a 'subjectively' derived understanding, within its own context, represents 'reality' for those concerned.

Denzin and Lincoln (1998: 3) offer the following definition: "Qualitative research is multi-method in focus, involving an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpreting phenomena in terms of the meanings people bring to them. Qualitative research involves the studied use and collection of a variety of empirical materials". Within this definition four key components of qualitative research are identified:

- (1) An emphasis on natural settings. (By natural settings is meant that the subjects of the inquiry are contained within the contexts that surround them in everyday life.)
- (2) A focus on interpretation and meaning. (Researchers not only ground their work in the empirical realities of their observations and interviews, but also play an important role in interpreting and making sense of that data.)
- (3) A focus on how respondents make sense of their own circumstances. (The researcher aims to present a holistic portrayal of the setting or phenomenon under study as understood by the respondents themselves.)
- (4) The use of multiple tactics. (This is referred to as bricolage, a pieced-together, close-knit set of practices that provide solutions to a problem in a concrete situation.)

Research undertaken within the qualitative tradition is characterised by a holistic overview of the context under study, achieved through intense and/or prolonged contact in a 'field' or 'life' situation. It tends to be more open-ended in both theoretical conception and research design due to the emergent nature of the data collection and analysis phases. Since there is relatively little use of standardised measures, the researcher is essentially the main 'measurement device' and plays an active role in the interpretive process throughout the study. The principal mode of analysis is undertaken through words (narrative devices) and visual representations together with data collected through observation. Within the qualitative tradition there are a number of approaches which have been developed for particular types of research tasks.

Very often, social scientists begin constructing a theory by observing aspects of social life, seeking to discover patterns that may point to more or less universal principles. Barney Glaser and Anselm Strauss (1967) coined the term 'grounded theory' in reference to this inductive method of theory construction (Rubin and Babbie, 1993). Grounded theory depends on methods that take the researcher into and close to the practical world so that the results and findings are 'grounded' in the empirical. In the grounded theory approach, the researcher seeks to enter a setting without preconceived notions or opinions of the situation. The activities of the setting determine the data. An iterative process of continually re-examining the data allows the theory to emerge from that empirical basis. Strauss and Corbin (1998: 12) have offered the following definition; "the researcher begins with an area of study and allows the theory to emerge from the data". The distinguishing feature of

grounded theory is its use of an intensive, open-ended, and iterative process that simultaneously involves data collection, coding (data analysis), and memoing (theory building). The network dimension analysis component of the NetWorkPlace™ study utilises a similar iterative process in order to reveal the patterns which enable the categorisation and interpretation of the data to be achieved, although not strictly a grounded theory approach per se.

Ethnographic studies culminate in a rich and full description of a particular setting, intended to persuade a wide audience of its human validity (Atkinson & Hammersley, 1998). Initially, ethnographic fieldwork was associated with studies undertaken within the field of anthropology. It has since been adopted by a number of other disciplines including sociology, organisation studies, educational research, and cultural studies. As was true of its anthropological heritage, ethnography puts particular emphasis on the researcher being immersed in a specific cultural context (Fetterman, 1989; 1993). The most distinctive characteristic of ethnographic fieldwork is its “reliance on ‘participant observation’ as the primary mode of data collection” (Atkinson et al., 1998: 183). This enables events to be contextualised to allow meaning to be inferred from activity. The ethnographic approach concentrates on describing the routine, daily lives of people with a focus on the more predictable patterns of human thought and behavior. Atkinson and Hammersley (1994) described ethnography as exploring the nature of particular social phenomena in detail, within just one, or a small number of cases. Girton (1986: 70) suggested that a “world as seen, heard, felt, and known in common is assumed and relied upon by ethnographers”, implying that observations are based on common-sense notions, but which may be susceptible to individual responses.

Interpretivism is derived principally from the phenomenological roots of the philosopher Edmund Husserl, carried on through a significant contribution by his student Martin Heidegger and the work of other scholars, most notably Alfred Schutz, who have adapted this tradition to the social sciences (Groat et al., 2002). Approaches to interpretive practice share subjectivist assumptions about the nature of members’ experience and social order. Schutz (Holstein & Gubrium, 1994) noted that an individual approaches the life world with a stock of knowledge composed of common-sense constructs and categories that are social in origin. These images, theories, ideas, values, and attitudes are applied to aspects of experience making them meaningful. A defining characteristic of interpretivism is the shared goal of understanding the complex world of lived experience, as seen from the point of view of those who live it. “The inquirer constructs a reading of the meaning making process of the people he or she studies” (Schwandt, 1998: 231). If one adopts the assumption that social facts are constructed from a subjective reality, the paradox of how to develop an objective interpretive science out of subjective human experience is not problematic, providing there is “intersubjective corroboration” in order to satisfy the “criterion for validity” as Seamon pointed out (Stefanovic, 1994: 214).

The interpretivist tradition uses the investigative methods of direct observation and open-ended interviews, attempting to see the world from the same points of view as the subjects being studied by understanding the stories within the stories and actions. It must be acknowledged that no one single way of seeing, investigating, and explaining is necessarily more correct than any other. They simply represent different ways of viewing the world depending on the purpose of the study. “None of the approaches have a built-in assurance that eternal and unshakeable ‘truth’ will or can be provided” (Cuff et al., 1992: 2). They merely provide a basis and a grounding for social action and understanding within a particular context. Similarly, “information and insights accumulated through scientific study and debate are always to some degree *tentative*, open to being revised, or even completely discarded, in the light of new evidence or arguments” (Giddens, 1993: 20).

# Appendix 4.1

## Indicative Interview Kit and Summary of Questions

**Host Company Logo Withheld by Request**

**Supply Chain Optimisation Project and NetWorkPlace™ Study**

# INTERVIEW KIT

## Category 1 & 2

### Interview Details

Interview		
Date:		
Time:		
Interviewers		
Name:		
Interviewee		
Code:		

### Interview Materials

Remember to take .....	Check (tick that you have these)
Interview Kit	
Tape Recorder (spare tapes, batteries)	
Digital camera (spare batteries, disk to download pics if required)	

Have you done the.....	Check (tick off when done)
<p><b>Introduction</b>            (Lead-up work will have established the Subjects' initial willingness to be interviewed, a scheduled interview time slot, and the forwarding of a "Project Information Sheet")</p> <p><b>(Introduce yourselves)</b> I'm ..... from ..... involved in the ..... Supply Chain Project.</p> <p>We are here to follow-up on the preliminary information you received regarding this project which is being hosted by ..... Have you had a chance to read the information sheet (if you haven't, would you like us to give you a brief overview)?</p> <p>We are gathering information on how supply chains work so that ..... can develop a methodology for all its Supply Chains. Part of the purpose is an academic study and we are looking at ways at which people who work in the Supply Chain can make practical recommendations on how the Supply Chain can be improved.</p> <p>The project will initially focus on ..... Process from manufacture ..... to installation ..... We will involve all critical players in this chain and exclude potential competitors. We're very interested to hear your comments as an integral part of this supply chain.</p> <p>Is there anything that you would like clarified before we start?</p>	
<p><b>Confidentiality Agreement</b>            The study team has signed a "Confidentiality Agreement" which states that your input will be treated in the strictest of <b>confidence</b>. The information you supply will be aggregated with other data to ensure <b>anonymity</b>. <b>(Show a copy of agreement)</b>.</p> <p><b>Recording</b>            Would you mind if our discussion is <b>recorded</b> on tape for transcription later? This will ensure that all of your comments are recorded <b>accurately</b> and will <b>save time</b> during the interview. You can ask me to <b>turn</b> the tape recorder <b>off</b> at <b>any time</b> e.g if you wish to share some information that you would rather not have on tape. Would you also mind if we took some general <b>photographs</b> of your workplace?</p>	
<p><b>Consent</b>            If you are now willing to proceed, would you mind reading this Consent Form carefully and sign it at the bottom. <b>(Sign two copies: take one copy and leave one copy for interviewee)</b></p> <p>Are you happy to start .....?</p> <p>Is it OK to turn the Tape Recorder on <b>(Turn on Tape Recorder)</b>.</p>	



QUESTION	DRILL DOWN QUESTIONS	PROMPTS	SUB-PROMPTS
<p><i>Let's start off by talking about your job in the [redacted] Supply Chain.</i></p> <p>1</p>	<p>Would you explain your role in the [redacted] Supply Chain?</p>	<p>→ Do you feel your role is clearly defined?</p> <p>→ Do you work alone or with others in the [redacted] Supply Chain?</p>	<p>→ Via performance management system, feedback from boss/customers, overtime</p> <p>→ Don't need to worry about what others are doing</p> <p>→ Required for task achievement, information, approval, other?</p>
<p><b>Summarise (using sub-prompts)</b></p>			
<p>Response/Comments:</p>			

**Summarise (using sub-prompts)**



## Interview Questions - SUMMARY

No.	Question	Prompt
<b>Category 1 &amp; 2</b>		
1	Would you explain your role in the [REDACTED] Supply Chain?	Do you feel your role is clearly defined?  Do you work alone or with others in the [REDACTED] Supply Chain?
2	Approximately how much of your working time (as a percentage) is involved with the [REDACTED] Supply Chain?	Average over a year.
3	What works well in the [REDACTED] Supply Chain?	Could you explain why you think these things in particular work well?
4	What do you think needs to be done to improve the [REDACTED] Supply Chain?	How are you allowed to improve the [REDACTED] Supply Chain?
5	Starting with the most important relationship, would you describe who you deal with in relation to the [REDACTED] Supply Chain?	Do the others you deal with in the Supply Chain know what your job involves?  Do you deal with them because they are part of a formal process?  Are there people outside the formal process you deal with? a) need to deal with to the get the job done b) don't deal with but would like to in order to get the job done  Have you had to deal with a crisis situation?  Would you tell us who you've dealt with to resolve the crisis?
6	Would you describe why you deal with these people you have mentioned?	
7	What key information do you need to do your work in the [REDACTED] Supply Chain?  For what purpose do you use this information?	What do you ask people?
8	Where do you get such information from?  Where do you store such information?	Which of these do you the most important? (social and technical)  What special skills (both social and technical) are required?  Would you be more likely to put your confidence in people or systems?  How confident do you feel to approach such people?  How approachable do you feel the person/people is/are?  How credible is the person in terms of the information, advice, and knowledge?



No.	Question	Prompt
		<p>Do you feel they can be trusted to handle your information in a:</p> <p>a) Reliable, dependable manner</p> <p>b) Care and concern for you</p>
9	<p>What tools do you use to communicate with the people you've referred to in the [REDACTED] Supply Chain?</p>	<p>Which of these do you use the most?</p> <p>Which of these do you find the most useful?</p>
10	<p>Would you give us some idea of how often you communicate with these</p> <p>a) people and</p> <p>b) systems</p> <p>in the [REDACTED] Supply Chain?</p>	
11	<p>Where are you located when you communicate with other people or systems in the [REDACTED] Supply Chain?</p>	<p>Are you always in the same place or do you need to be in a variety of places?</p> <p><i>(if a variety)</i> Please explain what other places you use or need access to?</p> <p>Would you explain how your "geographical location" in relation to others in the Supply Chain, affects your communication?</p> <p>Would you comment on whether your "physical workplace" affects your communication in the Supply Chain?</p> <p>Just as many people attach special meaning to their home, would you comment on what your "workplace" means to you?</p> <p>If you say that a sense of place is important to you then do you have any say in where you work and how your workplace is arranged?</p> <p>What say you would like to have in the design of your workplace?</p>
12	<p>Now we would like to discuss how you feel about your work in the Supply Chain overall?</p>	
	<p>To help with this, we will ask a number of questions about specific issues and how they affect you personally.</p>	<p>Does it give you a sense of achievement?</p> <p>Do you get feedback that is relevant and in time to make any adjustments or changes?</p> <p>Can you continue to learn new things?</p> <p>Are you able to share your experience, learnings, knowledge, them with others?</p> <p>Are you empowered to apply learning to work?</p> <p>Are there systems to capture knowledge?</p> <p>Do you have enough opportunity/scope to question organisational routines?</p> <p>Do you have enough autonomy to do your job well?</p>

No.	Question	Prompt
		What help do you need from others and who are they?  Who needs your help to do their job and what type of help?
13	We are close to wrapping up, so is there anything I've missed, that you would like to comment on?	
<b>Category 3 ( &amp; adapt for Category 4)</b>		
1	Would you explain your role in the [REDACTED] Supply Chain?	Do you feel your role is clearly defined?  Do you work alone or with others in the Supply Chain?
2	We'd now like to ask some questions on the organizations in the Supply Chain.	Which organisations do you deal with?  How frequently do you have contact with these organizations?  Do you know people in these organisations/groups very well?  Is each of these linkages/connections for only one purpose or can some or all of them serve two or more purposes?  Are there any organisations that you deal with indirectly and why?  Do you have any alternative sources?
3	What do you think needs to be done to improve the [REDACTED] Supply Chain?	How are you allowed to improve the Supply Chain?
4	From when you first got into the Supply Chain, has anything changed?	Are the initial factors the same compared with today's factors?
5	We would like to discuss relationships.	When problems arise, are they mostly solved through <ul style="list-style-type: none"> <li>a) enforcement of legal agreements (including contracts)?</li> <li>b) through formal dispute mechanisms?</li> <li>c) solutions usually worked out informally and cooperatively between the parties?</li> </ul> Does this formality scale vary with issue?  How important are personal contacts in your dealings with other organisations in the Supply Chain?
6		Could you comment on any non-economic benefits you see associated with the supply chain?  Were they always present or did they evolve over time?  How would you describe your commitment to the Supply Chain

No.	Question	Prompt
7	When it comes to making decisions, who has the most muscle (power)?	<p>Are you able to plan and carry out your operations independently of others in the Supply Chain?</p> <p>What model of planning would you prefer to use in the Supply Chain?</p>
8	Overall, would you describe how you work together in the Supply Chain?	<p>How concerned are the parties for the interests and welfare of the others?</p> <p>In general, do you think that other organisations in the Supply Chain provide a reliable, actual and factual picture of their business?</p> <p>How good are the others at keeping their promises?</p> <p>How do you protect your own interests?</p>
9	What Improvement Strategies do you use	<p>Do you have a specific Supply Chain strategy?</p> <p>How does your organisational structure design impact upon supply chain management?</p> <p>Can you explain the role your support mechanisms play in Supply Chain Management?</p> <p>Behaviours that encourage Innovation</p> <p>How would you describe the Communications approach used in the Supply Chain?</p>
10	We'd like to explore some workplace design issues in relation to your supervisory or management role.	<p>As far as you are aware, does the Organisation have a formal policy in relation to workplace design (e.g. office layout/fit-out)?</p> <p>Would you comment on how you think geographical location of members across the chain impacts on their interaction and communication?</p> <p>Would you comment on whether you think the physical work environment enhances or inhibits interaction and communication?</p> <p>What changes would you like to see made?</p> <p>Are you in a position to initiate such a change and would you?</p> <p>Would you share your thoughts about the value of "user participation" in the workplace design process?</p> <p>Would it be practical to implement user participation across the [REDACTED] Supply Chain?</p>
11	Do you have any other questions or comments?	

# Appendix 4.2

## Typical SCOR Process Maps

# SCOR Process Levels

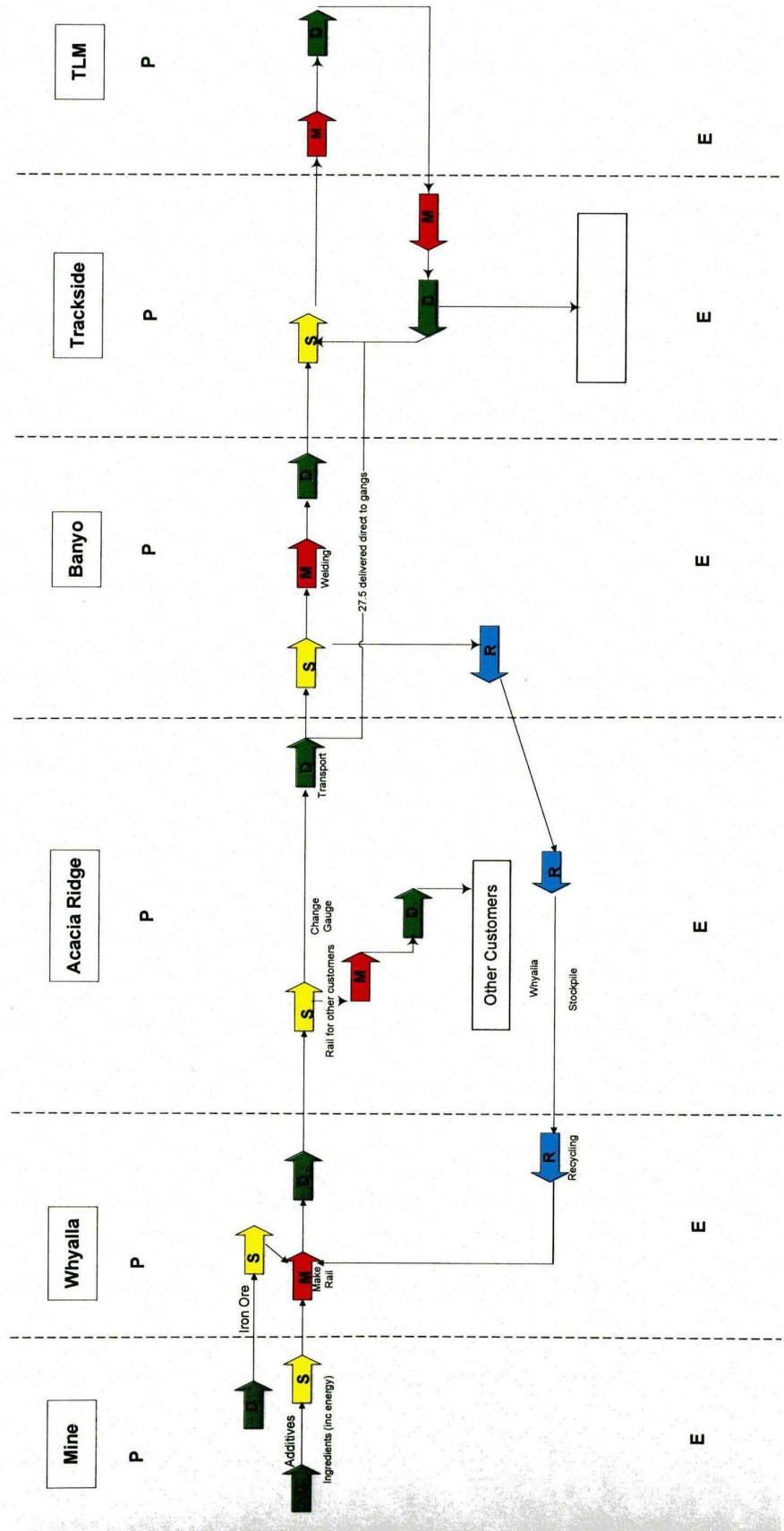
Level		Description	Schematic	Comments
#	Description			
1	Top Level (Process Types)			Level 1 defines the scope and content for the Supply Chain Operations Reference-model.  Here basis of competition performance targets are set.
2	Configuration Level (Process Categories)			A company's supply chain can be "configured-to-order" at Level 2 from approximately 17 core "process categories." Companies implement their operations strategy through the configuration they choose for their supply chain
3	Process Element Level (Decompose Processes)	  <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>P3.1 Identify, Prioritize, and Aggregate Production Requirements</p> <p>P3.2 Identify, Assess, and Aggregate Production Resources</p> <p>P3.3 Balance Production Resources with Production Requirements</p> <p>P3.4 Establish Detailed Production Plans</p> </div>		Companies "fine tune" their Operations Strategy at Level 3 Level 3 defines a company's ability to compete successfully in its chosen markets and consists of: <ul style="list-style-type: none"> <li>• Process element definitions</li> <li>• Process element information inputs and outputs</li> <li>• Process performance metrics</li> <li>• Best practices, where applicable</li> <li>• System capabilities require to support best practices</li> <li>• Systems/tools by vendor</li> </ul>
4	Implementation Level (Decompose Process Elements)			Companies implement specific supply-chain management practices at this level.  Level 4 defines practices to achieve competitive advantage and to adapt to changing business conditions



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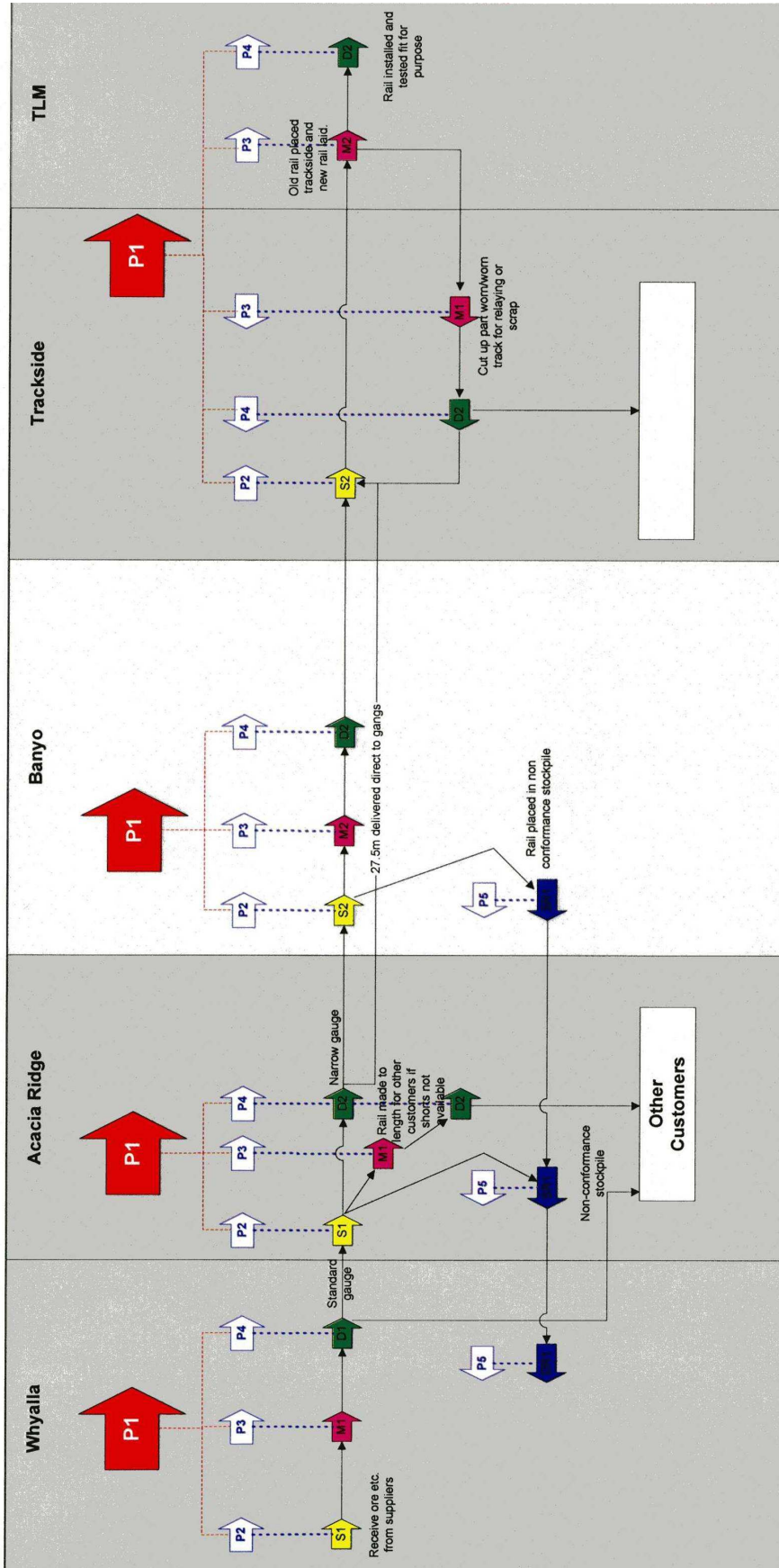
# Level 1 SCOR map

Supply Chain Using Level 1 SCOR Thread Diagram



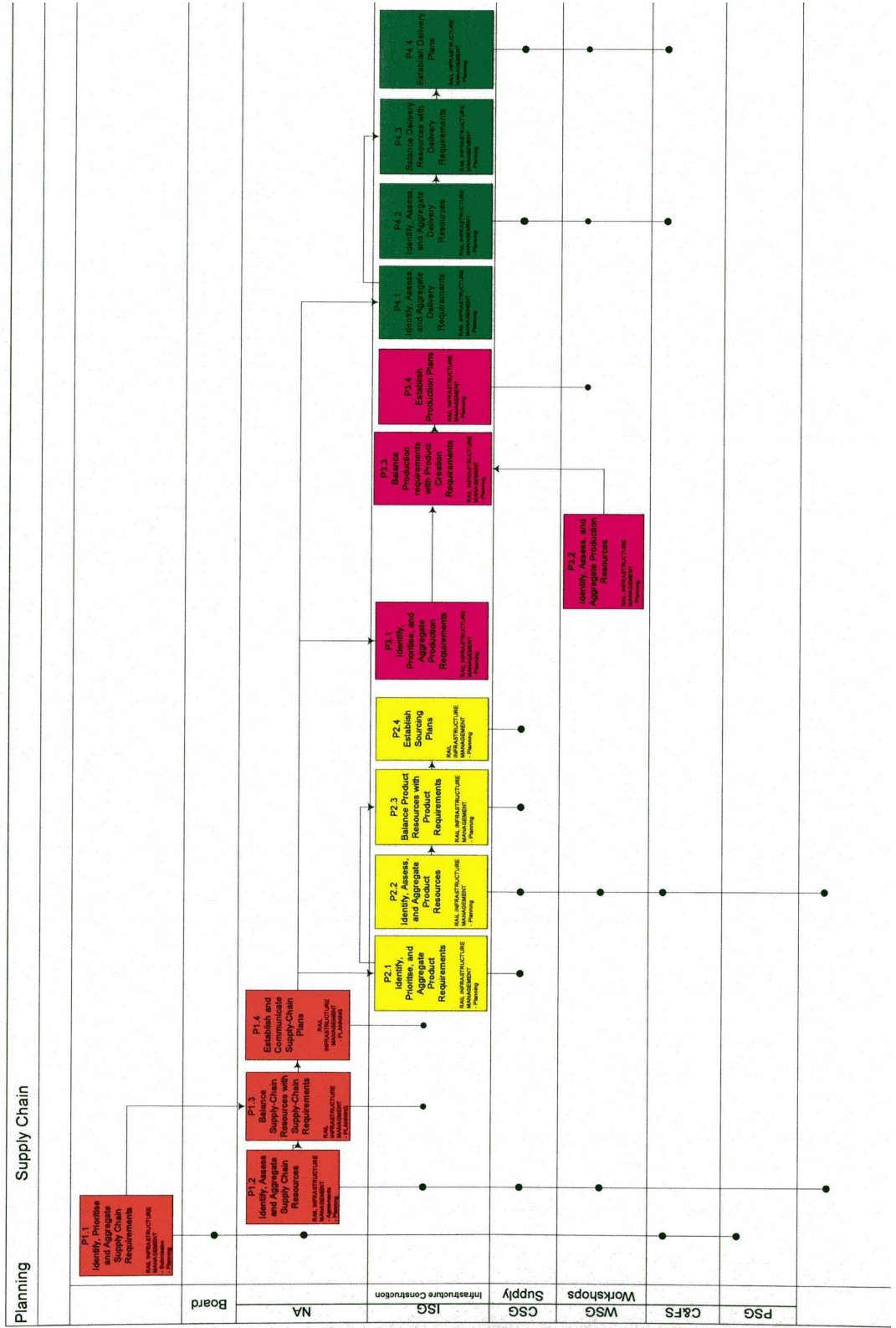
# Level 2 SCOR map

Supply Chain Using Level 2 SCOR Thread Diagram

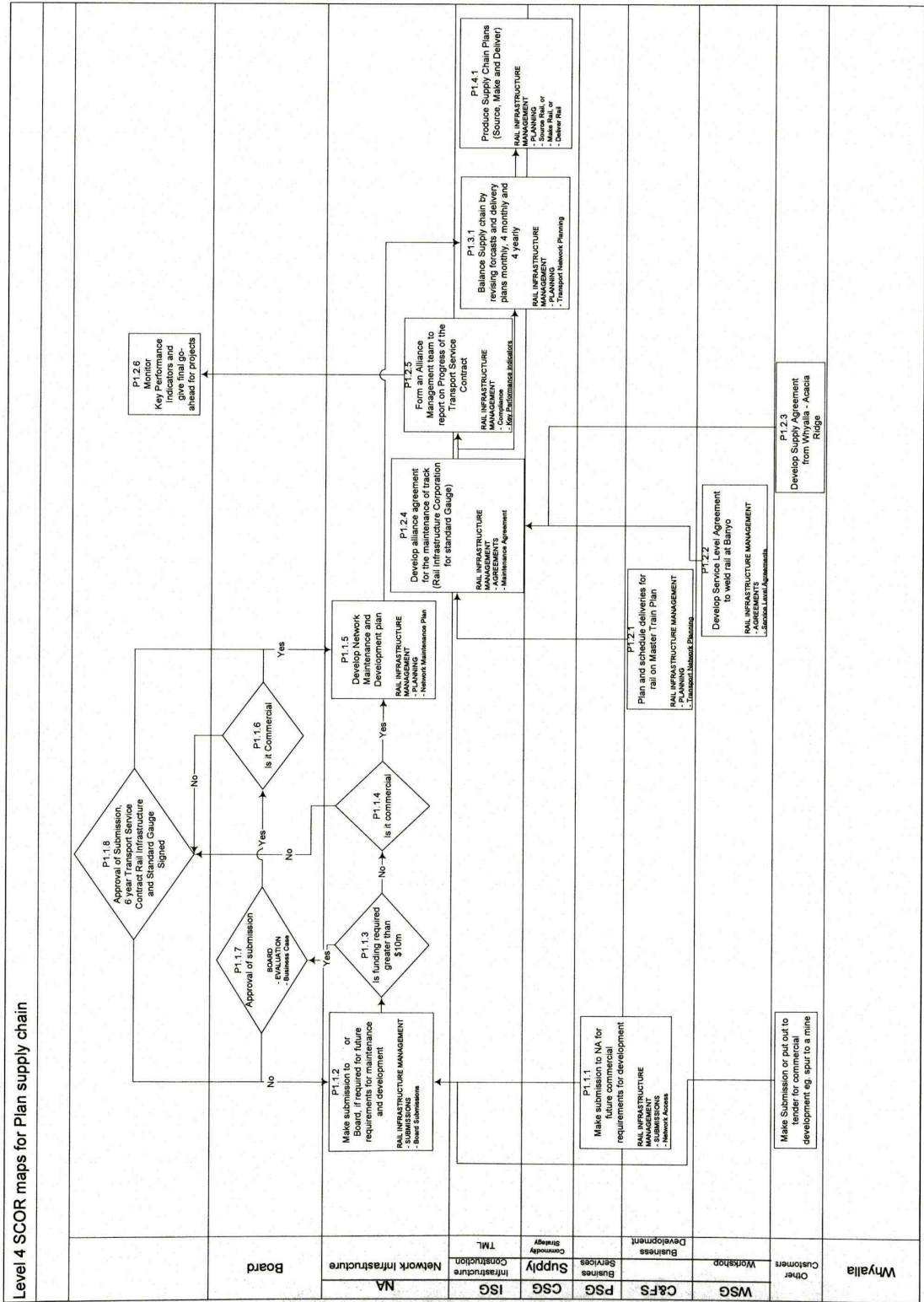




## Level 3 map – Plan Supply Chain



# Level 4 map – Plan Supply Chain





# Appendix 4.3

## Information Sheet

### INFORMATION SHEET

#### ██████████ would like to invite you to participate in a project that aims to:

- Develop a methodology that ██████████ managers can use to manage and improve their inbound supply chains (i.e. the planning, sourcing, making and delivering of the products and services required to do business).
- Identify and understand both the technical and social factors impacting on cooperation within a supply chain.

#### ██████████ has undertaken this project because:

- Industry wide knowledge indicates that if a supply chain cannot continually improve, it will be unable to remain competitive.
- No suitable Supply Chain Management methodology exists which considers both the technical aspects and the people aspects that impact upon the performance of a supply chain.

#### This project will:

- Initially look at the supply of rail from manufacture, through transportation, to assembly and installation of ██████████.
- Use a multidisciplinary team investigation approach comprising QR staff and academic researchers from four Australian Universities (i.e. QUT, UQ, Griffith, RMIT).
- Involve conducting either individual or focus group interviews with a range of stakeholders
- Be completed by ██████████ business operations.
- Involve minimal risk to ██████████
- Met all corporate and ethical requirements as endorsed by ██████████ Research & Development Committee.

#### The benefits that this project intends to deliver are:

- Methodology for optimising the performance of ██████████ inbound supply chain.
- Introduction of a process reference model for ██████████ to manage their business. This model will integrate with ██████████ Activity Based Costing & Records Management frameworks, and other relevant policies and guidelines, resulting in reduction of duplication, effort, and interface complexity.
- Reduction in QR's risk exposure e.g. safety, business continuity.
- Increase in corporate image.
- Operational efficiencies.
- Improvements in processes, information capture and transfer, technology developments, workplace environment and relationship interfaces.

All stakeholders in the supply chain can expect to directly or indirectly benefit from this project.

#### ██████████ proposed nature of your involvement is:

We would like to interview you (face to face) for about 1½ hours in your office/employment capacity. Attached is a copy of the questions we will be asking you.

Your participation in this project is completely **voluntary** and you will be asked to sign a 'Consent to Participate' form prior to any involvement. You will be able to withdraw from the study at any time without comment or penalty.

Also, with your permission and the permission of any relevant managers, we would like to do some general observations of you workplace.

The information that you share with us will be:

- kept strictly **confidential** and stored and reported in a way that does not identify individuals.
- kept for the period necessary to comply with the various University requirements, and then destroyed.

To assure the above, ██████████ and the project researchers have signed a **Confidentiality Agreement**.

For your information, we will also be interviewing:

- Senior management in their capacity of making strategic decisions regarding the supply of rail.
- Those who provide specialist advice on aspects of the supply ██████████.

#### Please feel free to contact the Project Manager (██████████) for:

- Further information or clarification regarding the project.
- Advising your concerns or complaints about the ethical conduct of the project.
- Obtaining feedback on the outcomes of the project.

██████████ may refer you to one or more of the project researchers (see attached list

██████████ contact details are:

Name: ██████████  
Division: ██████████  
Group: ██████████  
Organization: ██████████  
Location: ██████████  
Phone: ██████████  
Fax: ██████████  
Email: ██████████

██████████  
General Manager  
6 January 2003

## INTERVIEW DETAILS

<b>Interview</b>	
Date:	
Time:	
<b>Interviewers</b>	
Name:	
<b>Interviewee</b>	
Name:	
Phone Number:	
Business Area:	
Location:	

The purpose of the interview is for the researchers to gain an understanding of your experiences of being involved in the [REDACTED] Supply Chain.

The interviews will be conducted in a conversational format, whereby the interviewer will introduce the area of interest, and you will be invited to discuss your relevant knowledge, attitudes, and opinions.

The following is a list of the questions that we are proposing to ask you.

We would appreciate if you previewed the questions before the interview to ensure our best use of your time and assure yourself that you are comfortable discussing the proposed topic areas.

In general, the interview will be a two-way discussion encompassing:

- Your role
- The people you deal with
- Information systems, sources, and uses
- Communication across the [redacted] Supply Chain
- Workplace locations and environments
- How you feel about your work in the Steel Rail Supply Chain overall
- What works well and what could be improved
- Any other issues relative to the [redacted] Supply Chain that you wish to raise

GENERAL QUESTION		RELATED SPECIFIC QUESTIONS	
1	Would you explain your role in the [redacted] Supply Chain?	→ Do you feel your role is clearly defined?	→ Do you work alone or with others in the [redacted] Supply Chain?
2	Approximately how much of your working time (as a percentage) is involved with the [redacted] Supply Chain?		
3	Starting with the most important relationship, would you describe who you deal with in relation to the [redacted] Supply Chain?		
4	Would you describe why you deal with these people you have mentioned?		
5	What key information do you need to do your work in the [redacted] Supply Chain? and		
6	For what purpose do you use this information?  Where do you get such information from? and Where do you store such information?	→ Which of these do you find of these the most important? (social and technical)	→ What special skills (both social and technical) are required? → Would you be more likely to put your confidence in people or systems?

**GENERAL QUESTION**

**RELATED SPECIFIC QUESTIONS**

	<ul style="list-style-type: none"> <li>→ How confident do you feel to approach such people?</li> <li>→ How approachable do you feel the person/people is?</li> <li>→ How credible is the person in terms of the information, advice, and knowledge?</li> <li>→ Do you feel they can be trusted to handle your information in a:             <ul style="list-style-type: none"> <li>a) Reliable, dependable manner</li> <li>b) Care and concern for you</li> </ul> </li> </ul>
<p>7 What tools do you use to communicate with the people you've referred to in the [redacted] Supply Chain?</p> <p>8 Would you give us some idea of how often you communicate with these a) people and b) systems in the [redacted] Supply Chain?</p>	<ul style="list-style-type: none"> <li>→ Which of these do you use the most?</li> <li>→ Which of these do you find the most useful?</li> </ul>
<p>9 Where are you located when you communicate with other people or systems in the [redacted] Supply Chain?</p>	<ul style="list-style-type: none"> <li>→ Are you always in the same place or do you need to be in a variety of places? <i>(if a variety)</i></li> <li>→ Please explain what other places you use or need access to?</li> <li>→ Would you explain how your "geographical location" in relation to others in the [redacted] Supply Chain, affects your communication?</li> <li>→ Would you comment on whether your "physical workplace" affects your communication in the [redacted] Supply Chain?</li> <li>→ Just as many people attach special meaning to their home, would you comment on what your "workplace" means to you?</li> <li>→ If you say that a sense of place is important to you then do you have any say in where you work and how your workplace is arranged?</li> <li>→ What say you would like to have in the design of your workplace?</li> </ul>

GENERAL QUESTION		RELATED SPECIFIC QUESTIONS	
10	How do you feel about your work in the [REDACTED] Supply Chain overall?	<ul style="list-style-type: none"> <li>→ Does it give you a sense of achievement?</li> <li>→ Do you get feedback that is relevant and in time to make any adjustments or changes?</li> <li>→ Can you continue to learn new things</li> <li>→ Are you able to share your experience, learnings, knowledge, with others?</li> <li>→ Are you empowered to apply learning to work?</li> <li>→ Are there systems to capture knowledge</li> <li>→ Do you have enough opportunity/scope to question organisational routines?</li> <li>→ Do you have enough autonomy to do your job well?</li> <li>→ What help do you need from others and who are they?</li> <li>→ Who needs your help to do their job and what type of help?</li> </ul>	
11	What works well in the [REDACTED] Supply Chain?		→ Could you explain why you think these things in particular work well?
12	What do you think needs to be done to improve the [REDACTED] Supply Chain?		→ How are you allowed to improve the [REDACTED] Supply Chain?
13	Any other comments?		

**We look forward to seeing you at the interview.**

## LIST OF RESEARCHERS

<b>Name</b>	<b>Organization</b>
Trevor Williams	Queensland University of Technology
Paul Smith	Queensland University of Technology
Don Kerr	Griffith University
Luke Houghton	Griffith University
Simon Fisher	University of Queensland
Kevin Burgess	RMIT University
Dean Hobson	
Del Cuddihy	
Anne Rego	



# Appendix 4.4

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## Consent to Participate Form

### CONSENT TO PARTICIPATE

A condition of the participating organisations and research institutions involved in this project is that the voluntary consent of all people participating in the study is obtained prior to the commencement of any data collection activities.

By signing below, you are indicating that you:

- have read and understood the information sheet about this project
- have had any questions answered to your satisfaction
- understand that you are free to withdraw at any time, without comment or penalty
- understand that at any time, you can contact the project manager if you have any questions about the project or any concerns about the ethical conduct of the study, and
- agree to participate in the project

Please indicate your choices to the options shown following by ticking the appropriate box:

- |  |                              |                             |
|--|------------------------------|-----------------------------|
| I agree to the use of an audio recording device      | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| I agree to the photographing of workplace area       | YES <input type="checkbox"/> | NO <input type="checkbox"/> |
| I require feedback about the outcomes of the project | YES <input type="checkbox"/> | NO <input type="checkbox"/> |

**Name** (printed in block letters): \_\_\_\_\_

**Date:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

# Appendix 4.5

## Confidentiality Agreement

### CONFIDENTIALITY AGREEMENT

Host Company  
Logo Withheld  
by Request

Supply  
Chain  
Optimisation  
Project

This agreement is made between [redacted] and the signatories listed hereunder, who for the purposes of this project will be referred to as the "Researchers".

- All information gathered will be treated as confidential data and kept in a secure location.
- Only members of the Research Team will have access to the raw data.
- All data will be analysed and reported upon, including publications, in an aggregated format.
- All respondents will remain anonymous for the purposes of reporting and publishing.
- No personal information will be divulged.
- Information deemed to be "commercial in confidence" by [redacted] or any other organization taking part in this study will be treated accordingly.

List of Researchers:

Name	Organization	Signature	Date
Trevor Williams	Queensland University of Technology	-----	-----
Paul Smith	Queensland University of Technology	-----	-----
Don Kerr	Griffith University	-----	-----
Luke Houghton	Griffith University	-----	-----
Simon Fisher	University of Queensland	-----	-----
Kevin Burgess	RMIT University	-----	-----
Dean Hobson	[redacted]	-----	-----
Del Cuddihy	[redacted]	-----	-----
Anne Rego	[redacted]	-----	-----

-----  
[redacted]  
General Manager [redacted]



## Appendix 5.1

**Table 5A.5: Complete list of 'Category' Definitions**

'Category'	Definition
<b>NetWorkPlace™ Specific:</b>	
Infrastructure	Physical objects, artefacts, and assets which a business acquires or leases in order to structure and undertake its operations such as buildings, computers, machinery, vehicles, etc.
Social Climate	The expression of the values, beliefs, norms, and practices of respondents which provide coherent ways for individuals and groups of people to act and behave within the network context.
<b>Additional Trans-Disciplinary Application:</b>	
Operations	The provision of goods and/or services which includes the making and/or transformation of such goods or services at different value adding steps in the business process. Operations knowledge includes understanding what and how to make things happen within the specific process.
Governance	The framework made legitimate by specific Government Acts which define how a corporation may operate. Such frameworks describe the formal structure of the organisation and contain policies and directives usually generated by the Board which both direct and constrain organisational activities.
Infrastructure	Physical objects, artefacts, and assets which a business acquires or leases in order to structure and undertake its operations such as buildings, computers, machinery, vehicles, etc.
Network Relations	Inter and intra-organisational network (ION) relations describes the formal structures through which different organisations form alliances or partnering arrangements to pursue business strategies. Network relations focuses on the aspect of voluntary co-operation between partners. Cooperation in this sense means the extent of each organisation's concern for the interests and welfare of its trading partners, its trust and confidence in the trading partners, and each trading partner's concern for the interests and welfare of the organisation.
Social Climate	The expression of the values, beliefs, norms, and practices of respondents which provide coherent ways for individuals and groups of people to act and behave within the network context.

## Appendix 5.2

**Table 5A.6: Complete list of ‘Construct’ Definitions**

<b>‘Construct’</b>	<b>Definition</b>
<b>NetWorkPlace™ Specific:</b>	
Spatial Policies	Formal organisational policies or guidelines related to design, allocation, or use of physical space.
Location	The physical place or places where the member is situated when undertaking their role in the supply chain.
Spatial Characteristics	Characteristics relative to the creation and use of physical or virtual space at the workplace site or between workplace sites.
Interaction	Formal and informal communication and relationship building between members of the supply chain, including modes utilised for communication or to engage with technology and/or information systems.
Participation	Individual and group involvement in the process of designing the workplace, including the ability to influence or make decisions through autonomy, empowerment, or authority.
Connection	An individual’s perceived connection to a physical place or membership of an identifiable group within the network. (This is discussed traditionally in terms of either sense of place, sense of community, or sense of belonging).
<b>Additional Trans-Disciplinary Application:</b>	
Explicit Knowledge	Knowledge which is made accessible and information which is recorded and codified for the understanding of others within the network and may include explanations of how to undertake specific tasks or processes related to the business operations.
Implicit (Tacit) Knowledge	Knowledge which is retained by individuals or groups and not provided as information which is open and accessible to others, for reasons such as personal gain, the maintenance of an advantaged position, or the inability to articulate despite a desire to do so.
Decision Support Systems	The use of information systems (not necessarily restricted to information technology) which take data, convert it into information and then apply rules to such information in a way which guides or directs a person or persons to take a specific course of action.
Learning	A complex process in which individuals acquire new knowledge and skills which assists them to become more effective but does not exclude acquiring knowledge which has the reverse effect.
Risk	The exposure to injury or loss resulting from all actions taken by an organisation in its operations and includes but is not limited to safety, financial, and strategic issues. The corporate governance framework usually provides guidance on what level of risk is acceptable for specific circumstances.
Compliance	Adherence to the rules, regulations, and laws within the governance framework which are imposed on an organisation, including external legislation.
Policies	Formal documents which outline the position an organisation adopts in respect to specific key functions such as (but not restricted to) finance, safety, the environment, office accommodation, and staff issues. The exact details of how a policy is to be applied are specified in the standards set out within the policy.

<b>'Construct'</b>	<b>Definition</b>
Stakeholders	Specific groups who for a range of reasons are affected by, concerned about, or can impact upon the operations and success or failure of an organisation. Common examples include customers, suppliers, staff, the community, the Board, Government, and that very special group known as shareholders.
Records Management	Records management includes the systematic capture, control, maintenance, distribution, access, and control of records and is primarily concerned with capturing complete, accurate, and reliable evidence of organisational activity for business purposes.
Technology	Machines and information handling equipment (telephones, computers, etc) which transform matter and information in more efficient ways than humans could do e.g. in faster time frames, in greater amounts, or in ways that human limitations would make impossible to endure.
Formalisation	The extent to which relations between partner organisations or members of the network are regulated through explicit agreements that define their rights and obligations.
Centrality	The relative proximities of members to the core of the network's system of exchanges, generally regarded as a measure of network power.
Intensity	The financial and informational resources that organisations commit to the network relations and their concern for outcomes.
Density	The extent to which organisations are directly connected with each other.
Trust	<p>The willingness to enter into arrangements involving greater risk with other individual(s), group(s), and organisation(s) than would normally be the case, due to a belief that mutual benefit will result and that such other parties would not seek to work against your interests.</p> <p>[At it's most basic, trust covers personal and contractual relationships such as the ability to make and keep promises. The customer loyalty literature extends this concept to include being willing to stay in a relationship for longer periods, tolerate greater uncertainty, and take greater risks within that relationship. The inter-organisational network (ION) literature has explored possible factors behind why organisations choose to trust and cooperate with each other. The social capital literature has built upon the ION literature.]</p>
Power	The ability of a person or persons to influence or force another person, group, or organisation to do things that they would not otherwise choose to do or to make them stop doing something they wish to do either through direct interaction or through structural arrangements such as laws and policies.
Cooperation	To jointly work or act together or to unite in producing a particular effect.
Collaboration	A joint approach between two or more parties from separate functions, disciplines, and/or organisations who share confidential information with each other in order to be able to better prepare for anticipated future states and requirements. The collaborative element involves being willing to cooperate with other parties in order to pursue an agreed direction.

## Appendix 5.3

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### Rationale for use of the term 'Variables' and the Concept of 'Fit'

#### Innovation as a Bounding Criterion

It has been well established in the supply chain management literature that firms are now compelled to consider the potential of the so-called new resources of technology, knowledge, relationship networks [and as this study argues, workplace design], if they are to innovate and operate effectively within the emerging business model. Extending the classification system of Tidd et al. (2001), Chapman et al. (2002; 2003) suggested that there are four dimensions within which such innovation can be investigated in the business sector. They define these as:

Transformational Innovation:

- ❑ far-reaching with the potential to change the very function of society or the organisation.

Radical Innovation:

- ❑ re-defines the way we think of, create and/or use a product or service.

Architectural Innovation:

- ❑ novel re-configurations of existing system components and/or processes.

Incremental Innovation:

- ❑ small step continuous change, often associated with team-working and incidental processes.

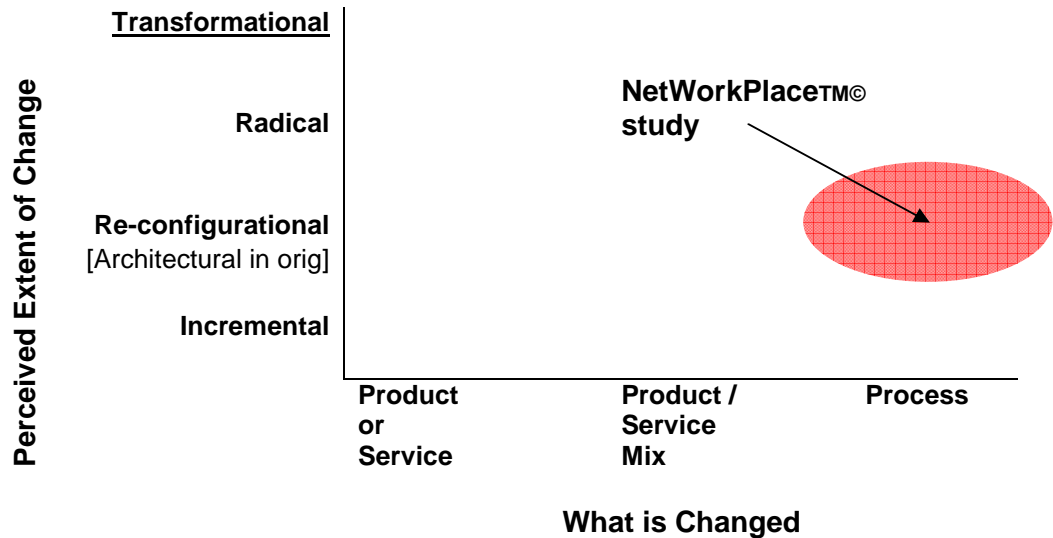
[In order to avoid confusion between 'architectural' as it is used by Chapman et al, and the more traditional application of the term to the architectural discipline as it is used throughout this study, 'Re-configurational Innovation' will be substituted as an alternative term to describe this dimension.]

The following diagram (Refer Fig 5A.1) indicates on the vertical axis, the perceived extent or scope of the change brought about by innovation ranging between incremental and transformational, and on the horizontal axis, the continuum relates to whether the innovation affects products (inc services), or processes. Positioning of the NetWorkPlace™ study is clearly indicated as being related to re-configurational innovation in relation to both organisational and network processes. This was established early in the analysis phase through data collected from interview participants in relation to the types of innovation which had been experienced in the past and what were envisaged as the most likely areas for future improvement opportunities.

The data indicated that transformational innovation was not a consideration as the organisations were involved in a mature industry and were looking to improve their positions within the established market. Whilst all of the organisations had large capital investment programs in place, none had in the past, nor intended in the future, to make any direct investment which would radically alter current products or services. There was considerable evidence that incremental innovations had been taking place across the entire network over many years, however as they were generally aimed at solving small local problems, the impact on the entire chain was not obvious. This challenges the benefits of small step improvements and suggests that in a supply chain context at least, innovation needs to be more focused on identified critical areas in order to be effective across the network.

The area of re-configurational innovation yielded the most insight as to the likely benefits to be realised in this context. The investigation showed that cooperation across the network, at the operational level at least, was very high and despite some significant bureaucratic obstacles (refer Chapter 7), indicated great potential for collaborative changes in the way and where things were done. An example of this can be lifted directly from the data and the adoption of some suggestions from the research team which were implemented during the investigation. A bottleneck at a nodal point in the network involving the delivery of raw material from the supplier, by the transport provider, to the customer, involved an unloading,

a welding, and a re-loading and distribution process to be undertaken. By implementing suggestions from the SCOP team in relation to work practices, and by utilising space in a different way together with the provision of some minor additional facilities suggested by the NetWorkPlace™ component, throughput of product over the entire chain was improved by almost fifty percent. Innovation is thus included in the Thematic Analysis Framework diagram for completeness.



(based on Chapman, Soosay & Kandampully, 2003; 632)

**Fig. 5A.1 Dimensions of Innovation and the NetWorkPlace™ Focus**

The extent of the current stage of the SCOP project and the corresponding scope of the NetWorkPlace™ study is indicated on the Preliminary Thematic Analysis Framework (refer Fig. 5.3). Importantly, the framework indicates how the trans-disciplinary components have been translated from the original Investigative Model (refer Fig. 4.5) into an integrated analysis process. The intention of this aspect of the overall discussion is moreover to illustrate the logic of the study and the development of the analysis framework, and further, to establish a robust basis upon which the findings of the current work can be tested through measurement and evaluation of network performance as future research opportunities arise. Performance in this sense relates to financial measures such as reduced costs and increased shareholder wealth, amongst others, but it is anticipated that increased reliability, greater satisfaction levels and a range of other social indicators will be incorporated in the ultimate evaluation process. The parameters for such an investigation are yet to be established but the intention is that they will be based on implementation of initiatives which are outcomes of the current studies.

In order to establish a tentative understanding of the relationship between the identified variables, the processes adopted to identify and implement innovations in and by the various organisations were examined. Each of the supplier, transport provider, and customer organisations were remarkably similar in the formal processes which they undertook. These comprised a structured R & D program in each organisation which were evaluated principally on financial returns within a specific and rigid pay-back period. Any ideas which did not comply with the rigid policies and guidelines were not progressed, at least within the formal process. All of the initiatives dealt with over the past ten years which were examined, concerned either equipment and technology relating to operational matters, or physical assets. The identified analysis 'categories' of governance, operations, and infrastructure thus had a direct relationship with or influence over the innovations considered within these organisations. The network relations 'category' dealt with formal associations between the various organisations and thus by extension, transposing the concept of innovation to the

network context, it was assumed that inter-organisational relationships in the form of legal contracts etc, would have a similar structural relationship overall. The interesting aspect discovered was the intricate webs of social interactions which operated in order to initiate many R & D proposals and the various schemes contrived to either make a particular innovation a success or failure, depending on certain self-interests of different groups. In short, this translates to what and how innovations are accepted by those people that they affect. The social 'category' of the analysis data thus also has both direct and indirect influences over the innovation process. A long tradition of 'people in organisations' and the way that they behave, suggests without having to justify the assumption in this case, that the social component of any institution will have some relationship or impact on the 'categories' already identified as belonging to the structural component. These tentative assumptions about relationships between 'categories' are reflected in the construction of the Thematic Analysis Framework.

## The Concept of 'Fit'

Borrowing concepts from an alternative paradigm which were relevant to the nature of the research in this instance provided a way of positioning this study to be discussed in terms of previous organisational research efforts and to ensure consistency for any potential extensions to this study in the future. The concept of 'fit' between organisational variables is certainly not new but has been used extensively as an important component of theory construction in the past (Aldrich, 1979; Thompson, 1967), particularly in relation to strategic management (Miles and Snow, 1978) from which supply chain management has adopted many of its grounding principles (McAdam and Brown, 2001). As supply chain management is not yet embedded within any universally acknowledged theories (Burgess, 2003), it seems appropriate at this point to defer to theories which have emerged from the strategic management discipline over time as a means of providing increased legitimacy to the approach adopted.

Building on the 'relationship between variables' premise of contingency theorists (Schoonhoven in Venkatraman, 1989), 'fit' claims Venkatraman (1989), is of central importance to both theoretical discussions and empirical research in strategic management. Accordingly, he identifies six distinct perspectives of 'fit' which are claimed to better enable verbal and statistical correspondence in the explanations associated with the testing of theoretical propositions in strategic management research. These have been labelled as:

### Criterion Specific:

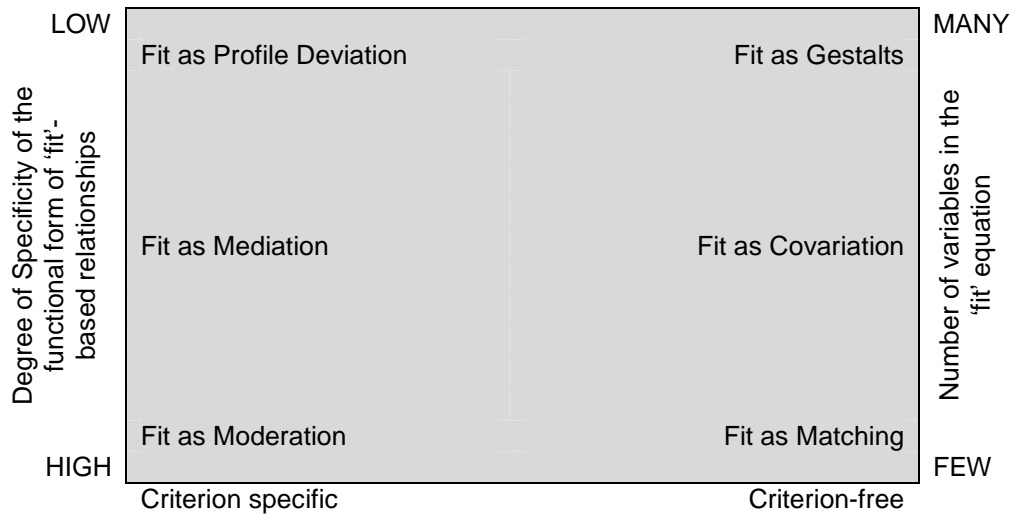
- fit as moderation
- fit as mediation
- fit as matching

### Criterion Free:

- fit as gestalts
- fit as profile deviation
- fit as covariation

The defining characteristics of the 'fit' based relationships are illustrated in the diagram below (refer Fig. 5A.2 based on Venkatraman, 1989: 425):

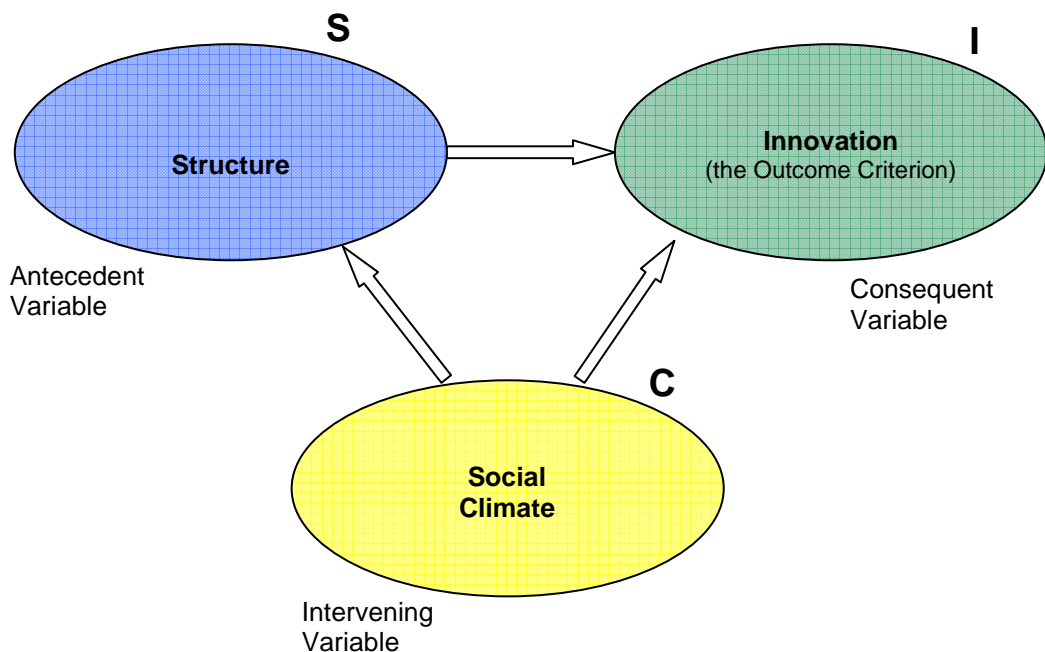
These differing perspectives were originally suggested for use in conjunction with statistical analysis procedures, but invoked for the purpose of greater clarification in 'explaining' the outcomes of the various relationships and interactions between variables. Although this approach was designed for use within a classic industrial economics framework of the 'structure-conduct-performance' model of organisations and their relationship with markets and the business environment, it is argued that the fundamental concept of 'fit' is as applicable to today's network model, the context of the current study described herein, and is adapted accordingly.



**Fig. 5A.2 The Specification of 'Fit' based Relationships**

The empirical data to date has shown that the social climate 'category' and its identified 'constructs' (or variables), constitutes a significant 'intervening' mechanism between the structural constructs and the innovation objective. Using Venkatraman's (1989) labels, these are described generally as intervening, antecedent, and consequent variables and are shown as such on the Preliminary Thematic Analysis Framework (refer Fig. 5.3) developed jointly for the SCOP project and NetWorkPlaceTM© study.

The concept termed 'fit as mediation', allows for the intervening effects between antecedent variables and consequent variables to be identified and described. As the central interest of the current study is to identify, describe, and where possible explain the interactions and systems of relationships between the structural components and the social components, it is Venkatraman's 'fit as mediation' perspective which has been adapted to aid in construction of the final Thematic Analysis Model (refer Fig. 5.4). Due to this concept being perhaps more familiar in organisational research undertakings than in those related to architecture and design, as an aid to greater understanding of the mediation perspective and how it applies herein, a brief description is provided below in both schematic and quasi-mathematical formats:



**Fig. 5A.3 'Fit as Mediation'**

Stated formally in relation to the above diagram, where C represents [Social Climate]; S represents [Structure]; and I represents [Innovation]:

- ❑ C is a mediator of the probabilistic relation  $I = f(S)$ ; if
- ❑ C is a probabilistic function of S [i.e.  $C = f(S)$ ]; and
- ❑ I is a probabilistic function of C [i.e.  $I = f(C)$ ]; where
- ❑ S; C; and I include different theoretical content.

(adapted from Venkatraman, 1989)

In considering 'fit' as a concept to be utilised in this study, the various perspectives were examined at length to ascertain applicability. In deciding that 'fit as mediation was the most appropriate, a number of criteria were satisfied. Venkatraman's (1989) categorisations suggest that the first choice to be made is based on whether the concept of 'fit' is anchored to a particular criterion (i.e. innovation as in this case) or whether a criterion-free specification has been adopted for the research effort. As this study is clearly criterion specific, the selection of possible 'fit' based relationships which could potentially apply is reduced to three. Of these, in the 'fit as profile deviation' perspective, 'fit' is the degree of adherence to an externally specified profile (of say e.g. innovation). Deviation from such an idealised or externally defined profile implies either a weakness or strengthening of the bi-variable alignment. This perspective allows the research to demonstrate that adherence to such a profile has implications for the total system. No externally defined profile or system for measuring deviation is present in the current study and so this perspective also clearly does not apply.

'Fit as moderation' is better suited to situations investigating the relative strengths of the effects of variables and is best understood when only two variables are involved. This perspective may have some relevance once a system of measurement between variables is established (possible for future research applications or stages) but would appear to be most effective if the variables were partitioned off as relational pairs which is not the intention here. 'Fit as mediation' has greater application when investigating the 'nature' of the relationship between variables and as distinct from the moderation perspective, mediation can be conceptually and analytically extended to consider multiple variables which is the situation in this case.

It is not considered necessary to elaborate on the distinctions any more at this point by comparing each of the perspectives further, save to say that the concept of the 'mediation' variable 'fits' with the conceptual approach of the SCOP project / NetWorkPlaceTM© study in that the existence and nature of the relationship between the structural and social variables (constructs) lies at the heart of the investigation. It is suggested also that this perspective sits more comfortably with an ontology that is neither positivist nor naturalistic in absolute terms but one that affords due respect to both objectivist and subjectivist realities.



## Appendix 5.4

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### Use of Analysis Software

#### The Use of Analysis Software

There was a general, albeit naïve assumption at the beginning of the analysis phase by the majority of the researchers involved, that utilisation of qualitative analysis software would be a natural part of the process undertaken. This was despite little knowledge of and even less experience in the use of such tools by the team involved. In anticipation, some basic instructional courses in the software package Nud\*st/QSR6 were undertaken by members.

This package appeared to suit the data set gathered as it facilitates the arrangement of information into free nodes and family tree structures (Richards, 2002) which correlate with the 'categories', 'constructs', and 'elements' already established in this study. Beyond this there are a large number of 'inquiries' into the data which can be performed to ascertain such characteristics as intersections, overlaps, unions, clustering, and cross-checking for similarities and differences.

Accordingly, transcript extracts representing each of the 'construct' nodes from all of the disciplinary researchers were imported into Nud\*st. These nodes were comprised of the core statements which constituted respondent's discussions and provided important details regarding the areas under investigation. Each core statement in the 'construct' node extracts had previously been manually checked with adjacent and surrounding text in the context of the overall discussion to ensure consistency with the general theme of the response recorded (Miller & Fredericks, 2003). A number of 'inquiries' or 'searches' were run on the data using the software to ascertain:

- intersections (i.e. examples of common text raised under different 'constructs')
- overlaps (i.e. the different situations in which, or the interplay of topics where, the intersections occur)
- unions (i.e. the merging of all specified nodes to indicate what was said about specific 'constructs' in any situation or context).

This activity produced a plethora of results which were initially treated with great optimism, however on closer inspection proved to be disappointing. Many of the linkages which intuitively were felt to be present from the earlier stages of analysis, did not appear in the tabulated results. Through a long process of discussion, interaction, and iteration between researchers based on the manual coding process already undertaken, it became obvious that several different 'elements' labeled independently, and occurring under different 'constructs' were inter-related. In many instances it became apparent that a number of the same conversation extracts were labeled differently, and many different conversation extracts were labeled similarly. It was resolved that this occurred because the issues or foci of concern were different due to the varying perspectives of the disciplines, and the situations or contexts which were their main area of concern. Some coding adjustments were made at this point and another trial run provided some improvement in outcomes. These were not however convincing enough for the team to be confident in continuing with the use of Nud\*st for this case study. This does not infer that the cause of the shortcomings reside with the software package, but may be more appropriately explained as either one or a combination of the following:

- inadequate level of skill possessed by the research team members at this point in time in either operating the program or presenting the data in an appropriate format
- lack of a single or central operator to oversee the process and consistency of inputs
- the complexity of the case, resulting in a large number of 'element' categories due to the various disciplines and differing situations, which could only be adequately analysed through a human interactive, negotiation process.

This experience may indicate that the use of analysis software is not particularly appropriate for such a trans-disciplinary study, or alternatively, that a high level of competency in applying the tools is required in order to realise any real benefits. Nevertheless, despite the disappointment at having to abandon the method because of time constraints which outweighed any perceived possible benefits of persevering, lessons were taken from the theoretical approach applied in using Nud\*st, and adapted to suit the manual coding process. These were utilised principally in two ways:

- ❑ by adopting the terminology used in Nud\*st which provided a definitive description of the analytical inquiry or search methods and thus provided a consistent understanding across team members about what, why, and where to look for particular clues or outcomes, and
- ❑ in the ordering of the data set which provided a level of confidence that the approach initially adopted for the study contained a sense of universal acceptability.

Further to this, an examination of the literature on other (but unrelated) studies which had used Nud\*st as a principal analysis tool, indicated strongly that a comparison between the attitudes or responses of different groups of participants within the same study could elicit some valuable explanatory evidence (Lewis, 2001; Lindop & Cannon, 2001; Mechanic & Meyer, 2000). These examples are in the fields of finance and medicine, the important point is however that all reported comparisons (with the exception of the latter which also contained some traditional statistical methods) were qualitative in nature and in the form of extracted text from case studies. This insight was particularly relevant as the various categories of respondents in the NetWorkPlace™ study often revealed quite divergent views on similar issues related to place, space, the bureaucratic system, and the application and use of technology.

Behrens and Smith (quoted in Krathwohl, 1998: 321) pointed out that using computer based analysis programs “does not render one’s assertions more valid than the time-honored method of cutting up field notes and putting sections in file folders. All qualitative analysis is a cognitive process, and all such programs can do is facilitate clerical and indexing tasks so the researcher has more time for thinking about the data.” Krathwohl (1998) further asserted that the time taken to master a particular program combined with the unlikely possibility that one may attempt more complex analysis with a computer program than without, makes the scissor and paste approach preferable, although these days there are likely to be as many proponents of the alternative view. No single preferred view is advocated herein except that to say the most appropriate method should be determined by the peculiarities of the specific case and the researchers involved.

As Dey (1993: 55) noted, “computers can do many things, but they cannot [as yet] think.” In the NetWorkPlace™ study computers provided an excellent way of storing and retrieving the data and for the purpose of participating in the trans-disciplinary aspects of the SCOP project, an invaluable method of communication and data distribution. A secure internet portal was established by the host organisation at the outset of the project and became an effective and efficient way for the various researchers to gain access to and share information.

The single revealing aspect of the Nud\*st analysis which was retained in relation to the NetWorkPlace™ study and is worthy of mention, indicates the frequency with which the identified ‘constructs’ appeared in the interview transcripts. Although these occurrences have no statistical significance, the number of retrievals are of interest from a qualitative perspective in that they indicate the relative importance of the various ‘constructs’ to the respondents in their attempts to explain and make meaning of their situations in this context. “The use of ‘quasi-statistics’ ..... can enhance the rigour and power of a qualitative analysis – providing always that we keep in mind just what the numbers mean” (Dey, 1993: 28). In descending order the frequency results achieved are as follows:

### Frequency of 'Construct' Retrievals from Transcripts

'construct'	frequency	retrieval rate
Interaction	91%	retrievals in 29 out of 32 documents
Participation	88%	retrievals in 28 out of 32 documents
Spatial Policies	72%	retrievals in 23 out of 32 documents
Location	72%	retrievals in 23 out of 32 documents
Spatial Characteristics	66%	retrievals in 21 out of 32 documents
Connection	28%	retrievals in 09 out of 32 documents

No further inferences were drawn in regard to these results except to conclude that 'social interaction' appeared to be the issue of significant interest and concern to the greatest number of respondents, whilst a sense of 'connection' or belonging was the least well represented. From the frequency results recorded, it may be inferred that 'connection' was thus not an issue of major concern.

Having personally undertaken the interviews, it is suggested that a far more likely explanation is that the majority of respondents had difficulty in articulating, or chose to completely avoid discussing such emotive topics to the extent that direct conclusions could not initially be drawn in any absolute sense. However, as outlined in the thesis discussion, some significant and reliable interpretations were eventually able to be made in relation to a sense of 'connection' and the ability to achieve this is attributed to the additional trans-disciplinary insights revealed through the overall collaborative research process employed.

## Appendix 5.5

**Table 5A.9: Exemplars – NetWorkPlace™ Interpretive Outcomes**

No.	Issue	Implication
<b>factor: PLACE</b>		
1.	Most members were unaware of whether a <b>workplace design policy</b> or design guidelines existed within their own organisation or not. Those who were aware of a policy, did not know anything of its content or intent, except for the one manager who was responsible for compliance. (In fact, only one of the three firms had a documented, formal policy.)	This is indicative of the low level of awareness of workplace design issues in the organisations comprising this study, implying that workplace design and spatial issues need to be embraced by the management discipline for serious consideration before the design disciplines can truly make meaningful contributions to the effectiveness of the network.
2.	<b>Sense of place</b> seems to be strongly influenced by the level of autonomy delegated to workers, or to the physical distance away from the hierarchical centres of power, rather than on any particular design features or considerations. Some evidence of 'connection' to physical place when a level of autonomy and/or empowerment is present, i.e. the ability to control one's own space.	Implications for the levels of empowerment and authority devolved throughout the network. Further evidence that collaboration between the management and design disciplines is a pre-requisite for effective implementation of workplace design solutions.
3.	A majority of participants appear to require, or at least prefer access to a <b>variety of workplace locations and configurations</b> .	There is a consciousness at least of the fact that different functions may well be better accommodated in different environments.
4.	Feelings of <b>disconnection</b> in relation to membership of either the formal <b>network structure</b> or the <b>social network</b> due to isolated physical location. Co-location was stated as being desirable but in most cases impractical.	Implications for role of spatial relations to assist in supporting social orientation. This could be compensated for by spending time in the office of others in the supply chain to exchange information and to learn about upstream and downstream processes.
5.	The ' <b>space of flows</b> ' (created by the ubiquitous spread of technology) currently appears to share no complementary characteristics with the ' <b>space of place</b> ', at least in the majority of respondents' understanding of how to optimise these two realities of the network enterprise.	This has created an intangible tension between the 'space of place' and the 'space of flows'. It would appear that this can be addressed through a reconsideration and perhaps redefinition of the precise purpose of each and of the interfaces between the spaces of place and flows. It may also be addressed by the introduction of shared spaces or interactional places, controlled by a negotiated ownership regime. Whatever the resolution, both the 'space of place' and the 'space of flows' must be accompanied by appropriate management policies and practices.

No.	Issue	Implication
6.	<p><b>Inability</b> of many respondents to <b>articulate</b> their feelings and attitudes about place. Although there was generally stated agreement across the whole range of respondent categories about the perceived importance of 'place', very few were able to elaborate on the subject to any great degree, nor terribly willing to engage in meaningful discussion on the topic. All of the management group respondents indicated that they considered the physical workplace had a large impact on the functional operations of the network and the ability for people to interact. They also considered that participation in the design process was very important, albeit very difficult to manage across a dispersed geographical area, but very few had any ability or authority to influence the process. In the case of the operational group, this seemed more likely to be a consequence of accepting that they had little influence and even less authority over such matters, and consequently was not something which was afforded much consideration.</p>	<p>This has implications for the way the profession 'engages' with clients in the design process and further to this, it presents a challenge for designers to establish and articulate the benefits of incorporating the integration of place and flows into the broader experience of 'being at work'.</p>
7.	<p>The meanings ascribed to the importance of '<b>place</b>' appear to have significantly different connotations for the different 'positionings' adopted by the respondent categories.</p>	<p>This implies that the problems associated with physical design in this context cannot be adequately addressed from a traditional 'architectural only' approach. It is apparent that the concept of the 'workplace' in a network context is composed of multiple layers and multiple realities, requiring additional input from sources comprising other areas of expertise.</p>
<b>factor: TECHNOLOGY</b>		
8.	<p>Feelings of <b>disconnection</b> appear to be related to a <b>lack of trust in</b> systems implemented through technology by management to impose controls which are not made explicit and thus not understood.</p>	<p>Implications for the interface between people, the 'space of place' they occupy, and the 'space of flows' symbolised by the technology and associated systems.</p>
9.	<p>Strong indication that the development of '<b>feral systems</b>', used to record data and communicate information selectively, is occurring in isolation with no apparent integration across the network. These are being introduced and utilised at the operational levels as a way to compensate for a lack of trust in the way network wide technological systems are being applied by the organisations to monitor and control, rather than enable.</p>	<p>Implies that the implementation of technology needs to engage the social system with the contingent consideration of the role played by the 'space of flows' and the interface with the 'space of place'.</p>

No.	Issue	Implication
10.	An over- <b>reliance</b> on the capacity of <b>technology</b> alone to provide the means and the stimulus for communication and interaction.	Disregard for the role of the social system reinforces the overall impression that its necessary supporting mechanisms, i.e. the physical workplace is also not valued.
11.	The implementation of <b>technological systems</b> , apparently devoid of any other considerations, in the hope that it alone will provide the 'silver bullet' solution to all problems. Often intended to ' <b>substitute</b> ' for people and places.	This has a significant impact on social relations and the ability for these to be established and maintained, particularly in the case of geographically dispersed locations and network members. The consequent implication for designers lies in their capacity to identify the balance between the roles of different spatial dimensions. This may be able to be addressed through the interface between the space of place and the space of flows and/or the utilisation of physical space through complementary management policies.
<b>factor: INTERACTION</b>		
12.	Feelings of <b>connection</b> to other people (not necessarily the whole social system) are facilitated by <b>personal relationships</b> .	The lessons to be learned and applied to disenfranchised components of the overall network may include consideration of how the use of physical space and technology can be better balanced or integrated.
13.	Feelings of <b>connecteion</b> appear to be strongly related to level of <b>trust</b> and reliance placed on <b>personal relationships</b> rather than any of the benefits provided by technology.	Implications for how the 'space of place' and the 'space of flows' can be utilised to support trust.
14.	Personal relationships stated to be strongly dependant on <b>face-to-face interaction</b> for both establishment and maintenance of such relationships.	Implications for how the 'space of place' and the 'space of flows' can be utilised to encourage and nurture relationships.
15.	Members appear to have a much greater reliance on social connections rather than technological or management systems to get their jobs done. Strong indication that <b>social networks</b> are relied upon by the operational levels as the mechanism to overcome corporate system controls and to usurp dominant power structures, i.e. an 'us' and 'them' culture is apparent.	Implications for the power dynamics created by the hierarchical structure existing within the network and the way that technology is used.
<b>factor: GOVERNANCE</b>		
16.	The <b>governance structures</b> of the individual businesses comprising the organisational alliance under investigation appear on many fronts to be in conflict and thus <b>incompatible</b> .	This has implications for the efficient functioning of the necessary network transactions.
<b>factor: BUREAUCRACY</b>		
17.	Strong evidence of hierarchical structures operating in both the private and Government owned business models, with high levels of control and <b>bureaucracy</b> evident. Hierarchical power is closely protected within organisational silos.	This has implications for the extent to which empowerment and participation are liable to be successfully introduced across the network.

No.	Issue	Implication
<b>factor: POWER RELATIONS</b>		
18.	<b>Power differentials</b> between categories of respondents is very apparent in relation to organisational and network structures, evidenced in relation to the space of flows (through technological access and/or exclusion) and the space of place (through locations ranging from centralised headquarter offices to de-centralised outposts; and space allocation, distribution, control, quality of conditions, and range of amenities provided).	Distribution and use of physical space appears to be a management control mechanism rather than an enabler of processes and interaction.
19.	Overwhelming feeling of <b>security</b> being the highest management priority, evidenced by controlling or restricting physical access to places and also access to information, resulting in an atmosphere of distrust.	Implications for how the 'space of place' and the 'space of flows' can be utilised to minimise the visible presence of, or perhaps even the need for some of the security measures.
20.	<b>Physical symbols</b> of power and control including those embedded in the physical workplace appear to be important to management levels.	Implications for the symbolic aspects of space and the role it plays in reinforcing or breaking down existing power dynamics within the network.
21.	Operational levels rely heavily on the possession and exchange of local and <b>tacit knowledge</b> to compensate for the restrictions of rules and policies which are rigid, highly structured, and often ignored.	Know-how and familiarity with others provide the mechanisms to get things done in spite of the rules which are often considered to be inhibitive.

# Appendix 5.6

**Table 5A.10: Exemplars - ‘Trans-Disciplinary’ Insights**

<b>Category: Corporate Governance</b>	<b>Construct: Risk</b>
<p>An analysis of the legal structures of the individual partner organisations revealed significant differences in governance arrangements between companies. The supplier organisation [S] is the least complex, operating as a publicly listed company registered on the Australian stock exchange after having been sold off by their previous multi-national parent company. All managers interviewed indicated that by being free of the constraints of the corporate parent, they now felt far more empowered and more in control of their own destinies. The transport provider [T] is a similarly listed company, however its governance structure is strongly influenced by the fact that it is an integrated hybrid firm operating in the road, rail, and shipping transport industries. The customer organisation [C] is a government owned corporation (GOC) and its governance structure proved to be the most complex, with an enormous amount of political involvement and the greatest number of internal checks and balances within the network, clearly designed to ensure risks are minimised where possible. A key feature is that shareholding ministers of government have the power to direct the board of a GOC to undertake non-commercial courses of action, and yet the GOC Act specifically states that the ministers are not directors. The community service obligation role imposed by ministers means that a GOC may not always be able to operate in ways which maximise shareholder wealth as is the case with the private organisations. Not surprisingly, all organisations appeared to be more risk averse as the economic stakes increased.</p>	
<b>Category: Corporate Governance</b>	<b>Construct: Compliance</b>
<p>All organisations appear to have tight compliance regimes in place. In relation to the supplier [S], these are primarily focused on quality assurance issues based around manufacturing requirements whereas the transport provider’s [T] major concerns appear to be with safety issues. In contrast, the GOC [C] has rigid compliance requirements on virtually every aspect of its operations. In general, governance requirements appear to be generating ever increasing overheads for all organisations by way of additional administrative effort and resources, and are clearly burdened by the demands of translating legislative requirements into operational realities. A view expressed by all indicated that internal reward systems seemed to be shifting focus towards legislative compliance leaving little time and space to address innovation. Staff in the GOC appear particularly concerned over the time consumed in trying to get new ideas through the various bureaucratic filters.</p>	
<b>Category: Corporate Governance</b>	<b>Construct: Policies</b>
<p>The GOC [C] clearly has far more policies and formal policy documents than either of its partner organisations, although none were willing to divulge the precise numbers. At the operational level, GOC staff expressed frustration at the number of policies they needed to comply with. As one interviewee remarked: “we have policies about policies and then more policies to interpret the interpretations, none of which really give you much of a clue about what to really do.” The reason for the lower level of policies in the supplier organisation [S] is not clear but it was inferred that having broken away from the corporate parent they perceived as overbearing, management seemed to realise the benefit of giving each area the necessary ‘elbow room’ to get things done with as little central interference as possible. This reflects a core belief of the participatory design approach embodied by the socio-technical systems framework discussed previously in the thesis.</p>	
<b>Category: Corporate Governance</b>	<b>Construct: Stakeholders/Shareholders</b>
<p>The key differences in governance structures of the organisations were reflected through the interview responses which highlighted a large variation in the attitudes of staff towards shareholders and stakeholders respectively. The supplier [S] is a shareholder focused firm and provided employees could demonstrate how a proposed change could add to shareholder wealth, they were confident that their suggestions would receive a fair hearing by management. This point is reinforced symbolically by an electronic bulletin board in the building foyer which displays the latest company share price. In contrast, the GOC [C] staff are far more conscious of the multitude of stakeholders and thus the need to consult with multi-levels of responsibility in order to bring about changes. Despite such differences and</p>	



constraints, it was the local changes generated by the GOC staff at a bottleneck in the production process which received the greatest praise from both organisations in terms of recent innovations. This proved to be the result of a team-based initiative, acting on information from the supply organisation and altering some previous work practices and physical layout arrangements which were sanctioned by local management, culminating in an almost 50% productivity improvement for the entire chain. Examples such as this confirm the benefits of providing autonomy, participation, and empowerment at appropriate levels, together with the possibility of achieving mutual gains across the network through the sharing of information.

<b>Category: Corporate Governance</b>	<b>SUMMARY</b>
<b>Corporate Governance</b> structures of the individual organisations as they are presently formulated appear to be incompatible in many respects and inhibit the ability or potential for free exchange and interaction across the network.	

<b>Category: Infrastructure</b>	<b>Construct: Technology</b>
Technology usage seemed to be largely limited to emails and faxes, often to confirm arrangements which had already been made by face-to-face or personal contacts. Firewalls within the computer systems of each organisation were also seen as a major obstacle to the ability to make better use of technology across organisational boundaries, and often within those boundaries due to restrictions on access to certain information still largely based on hierarchical parameters. This appeared to discourage the use of corporate wide computer systems and to encourage the development of a proliferation of feral systems by independent work groups in order to get their work done.	

<b>Category: Infrastructure</b>	<b>Construct: Location</b>
Over three-quarters of interviewees expressed the view that co-location of staff involved in the supply chain in a single office was highly desirable on two grounds. The first was around tacit knowledge and the view that one needed to be near those with it in order to gain it, and being around the action meant one could pick up on issues in a timely manner. The second was based on the building of social bonds and trusting relationships.	

<b>Category: Infrastructure</b>	<b>Construct: Spatial Policies</b>
When asked about office layout policy, only four managers from the customer group [C] were even aware that a formal policy existed and only two were aware of its specific content (with one being its author). Not even a single respondent from the supplier [S] or transport provider [T] was aware of such a policy in their organisation. Further investigation revealed that the supplier organisation in fact had no formal policy and the transport provider, although a policy existed, the norm was for senior managers to exercise their own discretion in decision making as a way of maintaining control in relation to workplace design.	

<b>Category: Infrastructure</b>	<b>Construct: Spatial Characteristics</b>
Approximately half of all respondents expressed the view that allowing the various players in the network to come together, even if only temporarily or occasionally, would improve supply chain performance, however there was little consensus on how this could be done. Two of the respondents expressed a view that offices should be built around processes but could not articulate how this could be translated into physical terms.	

<b>Category: Infrastructure</b>	<b>SUMMARY</b>
<b>Infrastructure</b> in the form of all encompassing computer systems appears to be placing too much emphasis on technology as the panacea required to solve all of the communication, data transmission, and information transfer requirements of organisations involved in the supply chain. The introduction of feral systems in isolation with no integration across the network challenges much of the logic driving the multi-million dollar investments the organisations are presently making into enterprise resource planning (ERP) systems. The role that location and physical layout play in supply chain management is clearly not something managers appear to have thought about in any depth and is an area requiring far more on-going research in order to capitalise on the possibilities that workplace design presents. It also highlights a challenge for the design professions to find ways of engaging with organisations in a network context on many other levels beyond that of mere service providers.	

<b>Category: Operations</b>	<b>Construct: Explicit Knowledge</b>
<p>Explicit knowledge tended to be localised and used in the development of the isolated feral systems, with no apparent integration across the network. This was found in all organisations but the incidence was far greater in the GOC customer group [C]. Some users appeared to appreciate that data integrity and reliability issues would be made even more difficult by feral systems. However, they justified their actions on the basis of having unique needs and wishing to avoid having to interact with complex ERP (Enterprise Resource Planning) systems. It was stated by respondents from across the network that these enterprise wide systems did not readily give them the reports they wanted and required too much time to develop such reporting capability. Records management was also found to be fragmented and contributed to both a lack of information sharing and duplication of records. Interviewees openly reported that they did not trust information systems with telling responses such as “no one trusts SAP” (Systems Application Protocol), but this appeared to point to more deeply entrenched problems associated with security issues and trust between management and operational staff generally.</p>	
<b>Category: Operations</b>	<b>Construct: Implicit Knowledge</b>
<p>Much of the same or related tacit information appeared in the interviews as data that was sometimes coded differently, but consistent in its revelations as it moved between people across the network. This may account for the high incidence of people reporting that they relied upon social rather than technical sources for key information. Despite having extensive quality assurance systems in all organisations, very little of the knowledge on how to make the chain run smoothly was made explicit. The interview data overwhelmingly revealed that staff, predominantly at the operational levels, expressed high trust in the reliability of the information offered by people and very low trust in that generated by information systems. A telling example is that one operational level supervisor in the customer organisation [C] was mentioned 110 times by the other 31 interviewees as being critical for a range of issues from planning through to fixing up day-to-day crises across the entire chain.</p>	
<b>Category: Operations</b>	<b>Construct: Decision Support</b>
<p>Decision support systems were perceived through the interview responses as being utilised only by some of the key members and were not being used in any obvious way by other members to connect across the chain. This finding was at odds with the needs expressed by senior managers who reported a strong desire to have a complete picture of the entire supply chain at their disposal when and as required. This highlights the disconnect between management desires and operational realities and is one of the significant indicators of conflict within the power dynamics of the network. The measurement and information systems used to manage the supply chain also had considerable variation. Despite the existence of over-arching information technology systems, feral systems were found to be embedded in many operational processes and at various locations across the network. Whilst the SCOR methodology comes complete with measures, it was found to be inadequate for the purposes of planning across the whole network. Specifically, the measures used in SCOR appear to be relevant to the activities of the customer organisation [C] as opposed to the activities of the entire network. Despite such limitations, for the purposes of the research, SCOR was found to be a useful tool for defining the operational processes and identifying the associated social system of the network.</p>	
<b>Category: Operations</b>	<b>Construct: Learning</b>
<p>Learning practices across the network showed a strong bias for learning on the job. Responses such as “it’s a complete waste of time sending them off to courses” and “better if I train them myself” were common. Much store was placed by respondents on practical experience and lessons learned from colleagues within their established social system.</p>	
<b>Category: Operations</b>	<b>SUMMARY</b>
<p><b>Operations</b> knowledge appears to be well communicated through social systems. The role of tacit knowledge and why it seems to be so highly valued needs more research to determine what is driving this approach and how it can be better utilised and supported. This in turn could assist in improving the speed at which members of the supply chain can learn and improve through more appropriate physical design solutions taking account of all the issues identified in this study and in particular the integration of and interface with technology.</p>	

<b>Category: Social Climate</b>	<b>Construct: Trust</b>
<p>All across the chain, interviewees reported the trust they placed in others to get their work done. For this reason, they were all conscious of the need to maintain good working relationships. This appears to be restricted to horizontal connections across the network with very little evidence of trust operating through the vertical direction of the hierarchical systems. The strongest influence on developing trust appeared to be the level of familiarity between people and there was no doubt that this depended on how often they had the opportunity to interact physically in the same place. The length of time people spent in their various roles seemed to help in developing trust, especially where key interdependencies were understood and the parties tried to genuinely assist each other. Interestingly, and alarmingly, the governance systems of the individual organisations and consequently the way they interact as a network, are at odds with this position. Governance stressed the need for contracts, formal documented performance management systems, and keeping records on just about everything in case something happened.</p>	
<b>Category: Social Climate</b>	<b>Construct: Power</b>
<p>Power in this sense relates to the level of inter-organisational dominance between the network partners. All organisations appeared to see the relationship as roughly equal, based generally on the belief that cooperation provided benefits within the larger marketplace. All appeared to be willing to go to great lengths to maintain good working relationships and avoid behaving opportunistically. A good example is provided by the fact that none of the partners has sought to impose liquidated damages penalties on any of the others for performance breaches despite having the contractual power to do so. This is certainly the situation in this particular supply chain, however the customer organisation [C] and the transport provider [T] who have other contractually unrelated business dependencies, are currently locked in a high court legal battle over the rights to operate assets commonly used and essential to the operations of both organisations. This dilemma contradicts much of the network and supply chain literature which advocates cooperation and collaboration in the interest of a market oriented rather than a single organisational approach, and highlights an anomaly not previously encountered in supply chain or cooperative network research. This issue may have implications for future supply chain management research but does not adversely impact on the NetWorkPlace™ study. In terms of the operational dependencies and the day to day interactions required to keep the network functioning, it is overwhelmingly the personal network of contacts which is the mechanism that makes things happen.</p>	
<b>Category: Social Climate</b>	<b>Construct: Collaboration</b>
<p>Collaboration is here taken to include all cooperative aspects of social and technical interactions which demonstrate commitment and willingness to do the right thing and support others. This aspect was found to be a very strong feature of this network. All parties appear to understand that in order to get things done at the operational level, they need to work with each other in mutually supportive ways.</p>	
<b>Category: Social Climate</b>	<b>Construct: Interaction</b>
<p>Responses varied in that, at the operational level, horizontal interactions appear to be frequent and egalitarian in nature. There were constant opinions expressed however that additional opportunities to engage in face-to-face interaction are highly desirable. In the case of vertical interactions, interviewees from all organisations expressed frustration at having to work up the hierarchical system due to a variety of factors common in a bureaucracy, such as the lack of time that those above them had to make themselves available for consultation and the sheer volume of governance matters, responsibility for which was continually devolved downward.</p>	
<b>Category: Social Climate</b>	<b>Construct: Participation</b>
<p>Participation by operational level staff in decision making processes was stated by management level respondents as being an important component in the overall operation of the network, and by operational respondents as a desirable state. However, the clear indication is that participation in practical terms is far from ideal and considered by the majority of operational level staff to be mere “tokenism” in the true bureaucratic tradition. Many respondents who had been asked to participate in workplace design matters were very critical as to the level of notice which appeared to have been taken of their inputs. The actual situation appears to be in stark contrast to all of the participatory design and socio-technical principals and goes some of the way to explaining many of the symptomatic problems apparent in the inter- and intra-organisational power dynamics present within this network.</p>	

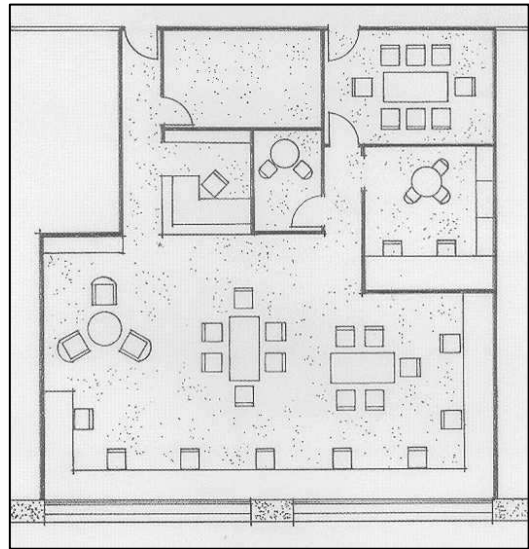
<b>Category: Social Climate</b>	<b>Construct: Connection</b>
<p>A sense of connection to either the network, an individual organisation, or to a particular place appeared to be difficult concepts for respondents to grasp or articulate their feelings about. There was certainly some sense of a feeling of connection (even if only in part) to some aspect of the social system and indications of a sense of place in isolated instances associated with a degree of autonomy or being away from the watchful eye of 'big-brother'. However, inferences can be drawn in regard to being, or desiring to be connected through the responses given and topics discussed throughout the entire interview process.</p>	
<b>Category: Social Climate</b>	<b>SUMMARY</b>
<p><b>Social Climate</b> data indicates overwhelmingly that a conducive social environment is needed if the objectives of the network enterprise are to be realised. The inter-relationships between the structural and social components need to be much better understood in order to implement formal frameworks, systems, processes, and supporting infrastructure which enable interaction and social relations to foster.</p>	

<b>Bounding Variable: Innovation</b>	<b>SUMMARY</b>
<p><b>Innovation</b> (Reconfigurational or Architectural as defined by SCOP) represents the best opportunity for improvements to be achieved in this type of supply chain through changes to the processes and the mechanisms which support them such as workplace design. The industries involved do not have the power to bring about transformational innovation, the economics associated with radical improvements are in the main too costly to be able to be justified, and incremental improvements are often too small to make any significant difference to the entire chain.</p>	

## Appendix 6.1

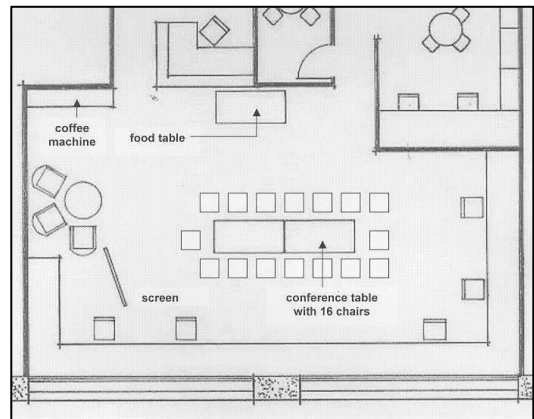
### Meeting No 1

A formal project coordination meeting attended by a group of 16 people, 4 members of the 'home' (PID) workspace and 12 members from elsewhere in the organisation (hereafter referred to in this discussion as 'foreigners') is the subject of the first observation session. The 'home' members were part of the active project team whilst the 'foreigners' represented the client business groups interests. The meeting was scheduled to commence at 12 noon with a light lunch being provided from 11:45 am.



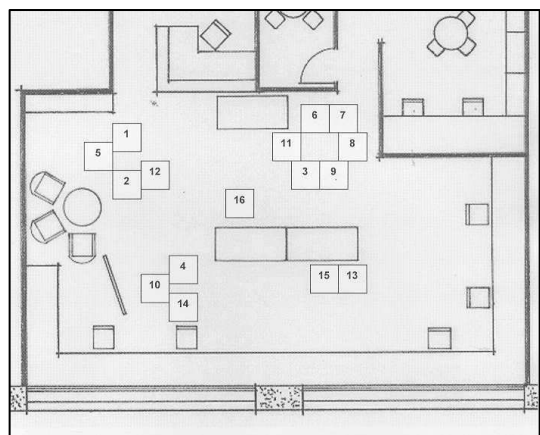
**PID – usual configuration**

The room was spatially arranged (as shown in the diagram adjacent) with a long table set up in the centre of the space, seating arranged uniformly around the table, a video projection screen set slightly off-centre at one end of the room so as to be easily viewed by all. Trays of sandwiches and containers of orange juice were arranged on a table at the entrance to the main space.



**PID – formal meeting layout**

Two 'home' members were distributing papers at each seating allocation whilst four other 'home' members remained at the perimeter desk spaces 'doing work' independently, when the first 'foreigner' (No 5) arrived. He was greeted enthusiastically by 'home' members (No's 1 - 4) and invited to partake in the food provided. (Upon the arrival of 'foreigner' member No 5, 'home' members No's 3 & 4 vacated their desk positions to join the 'welcoming' party whilst the two remaining 'home' members, not involved in the meeting, remained at their desks working.)

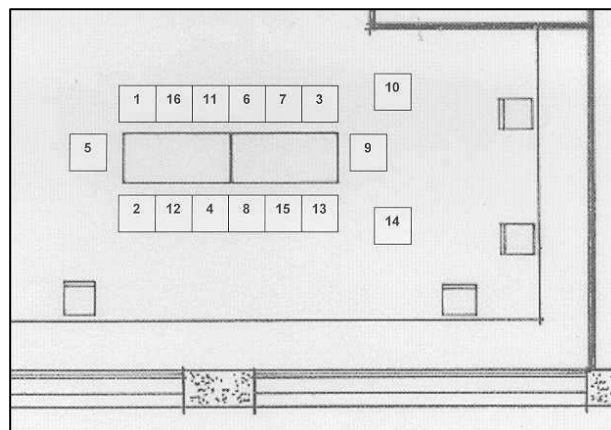


**Pre-meeting – standing configuration**

A few moments later, 'foreigners' (No's 6 & 7) arrived together and following a more hesitant response to the welcome greeting, collected some food and moved off to stand at one side. 'Home' member (No 3) joined this pair in conversation in what appeared to be a reinforcing (or repairing) of the (less than successful) welcoming gesture. 'Foreigners' (No's 8 & 9) arrived and after being greeted, joined (No's 6 & 7) in conversation.

'Foreigner' (No 10) arrived and after being greeted, moved off to a separate location to eat alone, giving no acknowledgment to the others. 'Home' member (No 4) joined 'foreigner' (No 10). 'Foreigners' (No's 11 - 13) arrived at the same time but obviously separately, as (No 11) joined (No's 6 - 9) whilst (No 12) joined (No's 1, 2 & 5) and (No 13) immediately retired to a position at one end of the meeting table. 'Foreigners' (No's 14 - 16) arrived at short intervals thereafter with (No 14) joining (No's 4 & 10), (No 15) joining (No 13) at the table and (No 16) taking up another 'alone' position at the table, giving a hesitant nod to the two already seated. These initial positioning maneuvers are shown illustrated in the diagram adjacent and immediately give the impression of a disjointed group, made up of members (some obviously familiar with each other) from different categorisation groups. It is logical to presume from the circumstances of the gathering, that this differentiation could be attributed to either business unit, job stream, hierarchical level membership categorisations, or simply previous familiarity or organisational 'cliques'.

At approximately 12:05 pm, 'home' member (No 1) invited all to sit at the table. The resultant table positionings chosen by members is shown adjacent. It is worth noting that the larger group who were previously gathered together, took up seats either adjacent to or opposite each other at the table, thus maintaining their 'closeness' or 'bond'.



**'Doing Meeting' – seated positions**

The seats at the head of the table were taken up by 'home' members (No's 1 & 2) and 'foreigner' (No 5), indicating some degree of leadership or control of the gathering. It was apparent the 'others' had some 'a priori' knowledge of this requirement or arrangement as these seats were purposefully left vacant (although member No 16 needed to be reminded by the other attendees) for what proved to be the Chairperson, the Project Coordinator and the Secretary to be seated last. This ritual was symbolic in indicating accepted behaviors and acknowledgment of member roles and relationships in the proceedings.

The pertinent point of the observations is that there was a conscious 'knowing' of the formal order and of location and connectedness. This is most aptly displayed by the maintenance of the 'standing' groupings or cliques once seating positions had been assumed, particularly the larger group (No's 3, 6, 7, 8, 9 & 11) and the 'outliers' (No's 10 & 14).

Another interesting observation is that of the male-female distribution and positioning. The females chose to sit on the 'far' side of the table indicating the possibility of a 'second place' or even subservient mindset amongst females in the organisation. This seemed to be compensated for somewhat, by adopting a mode of physically 'sticking together'. That the larger group (No's 3, 6, 7, 8, 9 & 11) consisted entirely of males gives some hint as to the male domination (hinted at also in the later focus group discussion) within the organisation. The fact that 'foreigner' (No 8) volunteered to sit amongst the females may say something about his individual personality more-so than any organisational inference which may be drawn.

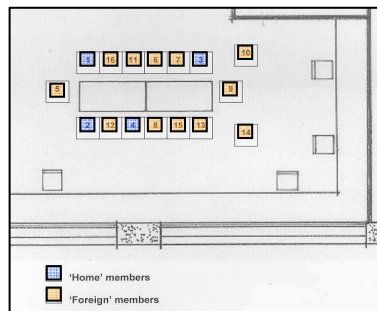
'Foreigner' (No's 10 & 14) took up seating positions which could be described as 'outliers'. This appeared to be a self-imposed exile and indicated that these members felt a degree of discomfort or a sense of not truly 'belonging' to the 'meeting' group. It later became known during the course of the meeting discussion, that these participants had been sent 'in place of' regular committee members. The behavior displayed by these members may be explained at least in part, by Heath's discussion on embarrassment in interactional organisation. Heath (1988: 137) quotes Goffman's argument that embarrassment "undermines a person's ability to participate in the topic or business of the encounter; embarrassment threatens the line of activity in which the participants are involved."

The positionings or orientations observed throughout the meeting provide the possibility of formulating an 'informal' membership categorisation device based on the following:

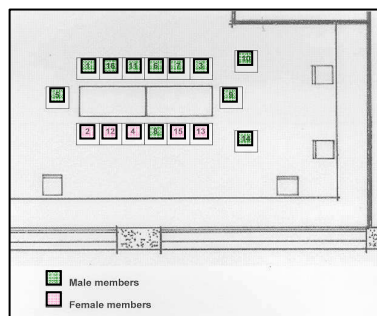
'Home' members	(No's 1 to 4)
'Foreign' members	(No's 5 to 16)
Male members	(No's 1, 3, 5, 6, 7, 8, 9, 10, 11, 14 & 16)
Female members	(No's 2, 4, 12, 13 & 15)
Leaders	(No's 1,2 & 5)
Project members	(No's 3, 4, 6, 7, 8, 9, 11, 12, 13, 15, & 16)
Outliers	(No's 10 & 14)
Uninvolved	(remaining 'home' members still working at desks)

These categorisations (shown following) have implications for the interactivity of the meeting which are further explored in the discussion of the meeting activity following.

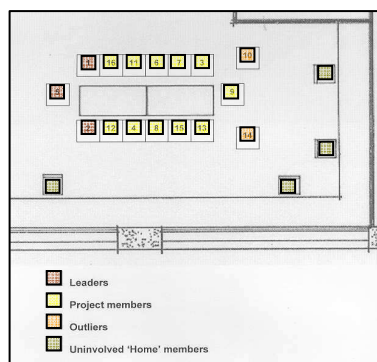
**Home members**  
**Foreign members**



**Male members**  
**Female members**



**Leaders**  
**Project members**  
**Outliers**  
**Uninvolved 'Home' members**



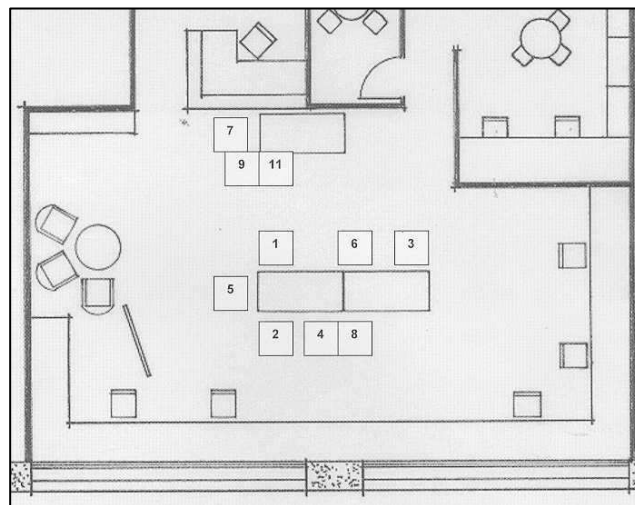
## The Meeting Activity

For the first 30mins, the only speakers were the Chairperson and Project Coordinator. At least 3 of the other participants (No's 7, 10 & 15) displayed a degree of disinterest in proceedings and were seen to 'drop off to sleep' for short periods, particularly when visuals were being displayed on the screen. When invited to contribute, 'foreigners' (No's 6 and 8 ) provided most of the interaction. These 2 participants were clearly older than the remainder and the degree of authority displayed, indicated that they were probably 'higher up the food chain' in a hierarchical sense, or more precisely, held higher positions in the organisation. This tended to indicate a deference to 'known' authority by the majority of members. These two had gravitated to the same member 'clique' during the initial positioning phase.

The discussion was quite orderly and formal (institutional) initially with polite behavior and regular turn-taking being displayed. At a point in the discussion upon which there was obvious disagreement, four of the other 'foreigners' joined in and many participants interjected and talked over each other. 'Home' members (No's 3 & 4) contributed at this time in a conciliatory manner and the meeting was ultimately brought to order after the Chairperson suggested a way to resolve the disagreement.

During the meeting, 'home' members not involved (four in total), continued to work quietly, seemingly oblivious to the adjacent activity, but obviously conscious that it was the priority activity within the total space. Some of the 'foreign' participants in the meeting displayed a level of discomfort that others (not connected to their activity) were present within the same space. This was obvious from many side glances and talking behind hands whilst discretely gesturing towards these workers.

At the conclusion of proceedings, 'home' members (No's 1 – 4) and 'foreigners' (No's 5, 6 & 8) remained behind to discuss aspects of the proceedings for a further 10 minutes. 'Foreigners' (No's 7, 9 & 11) retired to the remaining food and stayed chatting socially for approximately 5 minutes, bidding courteous farewells before departing (refer to diagram adjacent).



**Post-meeting – member orientations**

This indicated a distinction between the 'work' clique of team members who displayed most of the authority and power (and in fact it is not unreasonable to extend this assumption to include interest) in the wider project during the meeting, and the 'social' clique who spent no more time 'doing business' than was socially acceptable.



## Appendix 6.2

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### Conversation Transcript

#### The 'Institutionality' of Information Seeking and Advice Giving

This is a transcript of the conversation between two managers (from the same organisation, but different areas of responsibility) resulting from a request by one to the other for advice regarding how the design of a new office layout was achieved and implemented.

#### Participants:

- E: denotes the Enquirer                      Manager of Engineering Services  
(ES)
- A: denotes the Advisor                        Manager of the Process Improvement Division  
(PID)
- [X] is inserted in lieu of the name of the organisation where this is specifically mentioned in the dialogue.
- [N] is inserted in lieu of a first name where specifically stated in the dialogue.

#### Index to Transcript Notation:

- =                      utterances which quickly follow the last one
- it is                      underlining indicates emphasis
- LOUD                      capitals indicate very loud utterances
- (    )                      inaudible utterances
- (barely)                      barely audible utterances
- (.)                      very small gaps or pauses
- (1.0)                      a pause for the duration of one second
- :::                      prolonged sound
- ,?                      Upward inflection
- .                      downward inflection
- huhuh                      laughter
- A(hh)nd                      incipient laughter
- [[and]]                      overlapping utterances
- [[but]]                      overlapping utterances

Line	Participant	Dialogue
1	A:	Hello [N] (.) how are you
2	E:	Good [N] (.) and thanks for taking the time to see me
3	A:	It's a pleasure (1) how exactly:: can I be of assistance?
4	E:	Well:: as I mentioned on the phone (.) it's about office space (.) I'm really:: intrigued by what you've done and just wanna find out how:: in the hell:: you got your staff to accept working in an open space With all the <u>pressure</u> from up top to cut costs (.) this seems like an ideal way to economise (.) but I'm worried about a <u>backlash</u> if I suggest a similar solution to my guys (.) there's just <u>no way</u> they're gonna give up anything that they've already got?
11	A:	Well (.) I'm certainly happy to help <u>and</u> I appreciate the chance to spread our gospel (.) But:: it's not primarily? about saving space or about giving anything up (.) It's much more:: about a <u>way</u> of working which suits our processes much better = and:: it's about getting people to examine <u>themselves</u> (.) <u>their working relationships</u> (.) and:: group values?
16	E:	That? sounds:: a bit:: touchy-feelish E-R-ish for my <u>engineering</u> guys
17	A:	Well:: maybe that's the point James (.) the whole issue is <u>about</u> getting in touch with your values and being open and honest about work practices and work processes
20	E:	This is a bit:: like alien territory to my guys Kev (2) uhhm (.) maybe:: if you walk me through the steps you went through (.) maybe I might be able to see how I could apply it in my area
23	A:	Basically(.) we saw this whole refurbishment thing as an opportunity?= People weren't really comfortable with the old cellular office arrangement and there was a lot of hesitancy about what the corporation was proposing to do with their standard fit-out approach(.) we just didn't believe that a one-size-fits-all solution was right for the whole organisation (.) so:: we got group agreement to try to change things and thought the best way to do this was to set up an " <u>alpha site</u> "
30	E:	What do you mean? exactly
31	A:	Essentially? (.) it involves letting a small group be free of the normal organizational restraints (.) in order to allow them to come up with <u>new</u> creative responses to old or emerging problems. [X] has no official policy on the concept of "alpha sites" (.) and:: I suspect few in [X] would be able to define the term (1) Nonetheless? [X] <u>has</u> actively sponsored such groups in a variety of forms over many years (.) I guess? the most common expression of this form:: being improvement teams set up for a specific project (.) The range of activities worked on by such teams has been across several disciplines (.) for example:: <u>technology</u> (.) <u>customer service</u> (.) <u>organisational development</u> etc? (3)  Process Improvement Division differed from normal improvement teams in <u>two</u> ways? Firstly:: (.) it was set up in a <u>permanent</u> as opposed to project structure = with a role of introducing best practice ideas into [X] (.) This involved <u>actively</u> gathering best practice information from external bodies interested in leading edge practices (.) for example:: the Australian Quality Council and a variety of benchmarking organisations (2) Secondly:: (.) it was placed in the Strategic Planning arm and given its own budget (.) and:: the location with strategy <u>was deliberate</u> to avoid being sucked into operational issues requiring immediate quick fix

Line	Participant	Dialogue
		solutions.(1) Being free? of such imperatives provided the space to work on improvement activities easily missed in an operational environment
53	E:	So-o:: does that mean you were working from a privileged? position right? from the start?
55	A:	On the <u>contrary</u> (.) it just means we were working from our own? position = which? may be different from someone else's (.) but we were potentially under more scrutiny because we were seen as swimming against? the tide
59	E:	Sorry? [N] (.) please go on
60	A:	<i>Prior:: to <u>any</u> consideration about office layout (.) Process Improvement did a strategic planning exercise to determine the following things (2)</i> <i>Our <u>Mission</u> (.) <u>what</u> was it? in [X] (2)</i> <i>Our <u>Business</u> (.) <u>what</u> business are we in? (2)</i> <i>Our <u>Processes</u> (.) how? could we deliver the mission in the most? effective manner? (2)</i> <i>It is worth <u>noting</u> (.) that little (.) or no? consideration was given to personal working needs at this stage</i> <i>Our short answers to the questions were? (1)</i> <i>To <u>locate</u> (.) <u>introduce</u> (.) and <u>implement</u> best practice and innovation into [X] management systems (1)</i> <i>We ascertained we were in the knowledge? management? business and we were all knowledge management workers (.) and =</i> <i>We also developed process? maps? = to demonstrate how we created knowledge for [X] (3)</i> <i>Doing this work (.) proved invaluable for the office design work that followed</i>
77	E:	Let me ask? (.) what did doing process maps prove? = isn't that just recording what you <u>do</u> every day
79	A:	Sure? but it made the whole thing transparent and examinable (2) All the staff accepted that in order to deliver results (.) the processes we managed would have to be maximised (1) This realisation was important because it opened up the group to being more <u>radical</u> in the solutions they came up with (2) The analysis we did of our processes (.) suggested there was little to be gained from the technical aspects of? the processes (1) P.I. <u>did</u> research some knowledge management tools which could umm do:: things such as improve search capabilities to track information (.) monitor web sites (.) etc = and while useful (.) the technology was still seen as immature and would only add value at the margin (1) It became apparent that the <u>critical</u> variable was the <u>social</u> (.) rather than the technical processes behind the creation of knowledge (2) The challenge became? how to <u>enhance</u> such processes (3) I hope this is making sense so-far
93	E:	Yer:: sure [N] (huhuh) (2) I'm just not sure it's how engineering guys think
95	A:	Well:: [N] (.) I think the thing to keep in mind is that everyone has processes = and more importantly (.) there is a social aspect wherever you've got people together
98	E:	Yer:: you're right [N] (.) but engineering types are another breed of people all over again = anyway (.) please carry on
100	A:	<i>Well (.) as I was saying? (.) from our planning sessions (.) it was already accepted that we needed to stop working on <u>individual</u> projects in</i>

Line	Participant	Dialogue
		<p>isolation from each other (2) So? (.) from my experience? I've found that knowledge is often created <u>between</u> disciplines rather than within. (1) Creating a structure that required staff to spend time explaining? their work to other team members and then actively taking responsibility for maximizing the benefits to flow from interdependencies between projects (.) was seen as a way of reinforcing some of the critical activities of a knowledge management team (1) I think it's fair to say (.) that these activities would be neglected if <u>traditional</u> top-down management approaches were used (3)</p> <p>As well as this (.) the innovation literature we reviewed also made clear the importance of networks = not only to create knowledge but also to diffuse innovation (1) Therefore (.) if PID was to <u>radically improve</u> in its core competency = <u>knowledge management</u> (.) it became apparent that such improvement would have to come from the social system</p>
116	E:	H-unfortunately:: (huhuh) I think I've got quite a <u>different</u> (.) as you call it (.) social system from the one you've got
118	A:	<p>Maybe so? (2) All our group believe that social processes are best aligned with values (.) therefore (.) a group with one set of values (.) will do the same process in a very different ways to a group with different values (1) So values <u>drive</u> social processes that in turn drive how teams do hard or technical processes = and this is the crunch (1) this includes the physical layout of the office used? (.) in or order to work in such processes (3)</p> <p><i>A values workshop we ran (.) revealed our group preference was to work in a collaborative way (.) which is lucky as it lined up with our planning conclusions and the structure we were trying to set in place (2)</i></p> <p>Also (.) many present in PID had either extensive organisation change management experience or behavioural science qualifications or both (1) The majority of the group also had high exposure to action learning principles (.) this made a big difference in how we saw the world and a willingness to experiment</p>
133	E:	But weren't you constrained? by the organisational structure
134	A:	<p>Formal? structure is largely set by [X] and HR policies which (.) as you well know (.) have roles and job descriptions outlined at the level of the individual <u>and</u> the traditional hierarchies (.) This <u>atomistic</u> approach also drives much of the thinking about office layout = that is (.) around the individual irrespective of function (1) Process and team are largely ignored (3)</p> <p>Despite such constraints (.) PID decided to strive for a process approach supported by team behaviour (2) What I mean by that = is where feasible (.) the interests of the process and team were to come before individual requirements (1) This does not mean individual requirements were ignored (.) <u>respect</u> for such concerns was given strong airings and if these requirements were so important to the individual (.) they were included in design considerations</p>
146	E:	I suspect:: most of <u>my</u> guys (.) see themselves basically as individual workers
148	A:	<p>Team is a poorly defined term (.) in this instance (.) the basic team unit was defined as that which served the major project (1) Reporting would also be around this structure (1) Loyalty to one team at the expense of another was not seen as a concern = because most staff reported to several teams (1) The chance of fragmenting into opposing teams was seen as low (.) The emphasis? placed on each team being responsible for managing independencies (.) to maximise group outcomes for PID (.) was also seen to support collaborative teamwork (1) So in a sense:: all</p>

Line	Participant	Dialogue
		your <u>individuals</u> are similarly responsible for group results (4) We also looked at our culture (.) and I <u>must say</u> (.) addressed it seriously? by determining <u>what</u> our values were and <u>what</u> we could become (1) This was important because we had no intention of trying to <u>implement</u> anything <u>beyond</u> our value system (2) Research into values and strategic planning convinced the group that it would be folly to try to implement a plan outside our values
163	E:	So how <u>did</u> you end up with the floor plan you've got
164	A:	As originally conceived (.) the refurbishment of the building envisaged an identical fit-out for every floor (.) with meeting and service rooms around the core and open workstations around the perimeter (2) This fit-out configuration was designed to be implemented within the framework of [X]'s dominant culture [X] is a <u>classical</u> operational efficiency organisation (.) it focuses on getting a standardised product out on time and at a reasonable cost = however (.) office infrastructure delivery is not naturally an operation suited to an operational effectiveness focus As a professional service organisation within [X] (.) PID has an organisational culture and focus which <u>is customer responsive</u> rather than operationally excellent (.) It focuses on listening <u>carefully</u> to it's customers and helping them to develop individualised and tailored solutions to their problems (1) This is reflected in PID's internal culture as well (.) which focuses on listening to each workgroup member and paying attention to their individual viewpoints (.) needs and feelings (.) as well as to group outputs
181	E:	Mmmm...(.) there is certainly a difference between Process Improvement and the [X] hierarchy
183	A:	Yes (.) [X] (.) on the other hand? (.) follows a hierarchical structure in which designated space is allocated according to hierarchal position (2) Did you know that over 50% of [X] Managers are Myers Briggs ISTJ types (1) we're talking introverted compared to extroverted (.) sensing compared to intuitive (.) thinking compared to feeling (.) and judging compared to being perceptive
189	E:	That is a pretty <u>telling</u> statistic [N]
190	A:	Yes (1) it may go a long way to explaining the high need for control and symbols of status and power (2) and this is <u>precisely</u> what is reinforced by the standard floor plan = irrespective of processes or culture of the workgroup within (3) Having said? that (.) in both its focus and internal culture (.) PID is very different from [X] as a whole (.) and this difference in culture and focus (.) was both a driver of and fundamental concern throughout the design process The new PID space was designed primarily (.) through two design workshops (.) these were held in our own office and facilitated by the designers (.) these workshops had some key features which I'll try and outline for you <ul style="list-style-type: none"> <li>• the design itself took place within the workshop (.) transparently (1). you can <u>contrast</u> this with the common black box approach (.) in which users are surveyed and interviewed (.) the consultants go away and perform a mysterious black box operation (.) returning (.) often to the bewilderment of the users (.) with a design</li> <li>• the workshops were also highly democratic (.) membership was all inclusive (.) and each workshop member had equal say (.) and all viewpoints were fully enunciated and heard</li> <li>• the workshops proceeded from large issues to small ones and</li> </ul>

Line	Participant	Dialogue
		were grounded in concrete detail (4) By building on PID's understanding of its core process and its role within [X] (.) the workshops developed a number of <u>distinct spatial implications</u> (.) and it's these concepts that form the basis of the PID Workspace Design (3) What we ended up with is what we call a free-address concept (.) we discovered that PID workgroup members spend only an average of 40% of their time away from their desks (.) space allocated to dedicated private desks is therefore wasted 40% of the time (1) What <u>that</u> means in space terms is that in <u>territorial</u> space (.) the 60% of workers present on any particular day have access to only 60% of the space (.) and in <u>non-territorial</u> space (.) the 60% of workers present on any particular day have access to 100% of the space (3) This was not achieved without overcoming some obstacles though (.) the proposal for a <u>free-address</u> system led to certain reservations within the [[workgroup]]
227	E:	[[Such as]]
228	A:	Such as where will I store my personal things (.) or how will I access my files (.) will I have control over <u>any</u> space (2) Overcoming these problems was not without some agony (2) but we worked through these as a group and came up with three major functional areas (1) these we describe as the <u>active</u> projects space (1) the <u>reflective</u> quiet space (1) and the <u>dedicated</u> meeting space
235	E:	<u>Not</u> easy
236	A:	That's pretty much the story (.) I would suggest though that if you have a desire to change (.) that it should be for the right reasons (3) But take heart (.) there is a way through it and we'd be more than happy to help out where we can (2) I won't get into any of the detailed design stuff at this stage cause I think you've got enough to think about with what I've told you so far
242	E:	This sure sounds like a very interesting experiment that you've described (.) and I must say I'm envious of you (2) I guess I've got a lot of convincing to do with my own lot (4) Thanks very very much [N] (.) I <u>really</u> do? appreciate the time you've spent
247	A:	It's a pleasure [N] (1) after all (.) that's why we're here (2) Don't <u>hesitate</u> to call me if you want to get something off the ground
249	E:	Good [N] (.) <u>I will</u> (.) bye for now

## Appendix 6.3

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### Conversation Analysis

#### 1. Conversation Analysis and Interactional Sequences:

Heritage (1997) indicated that a fundamental principle in CA is contained in the fact that meaning and context are related to the sequential organisation of the utterances. He explained that the meaning of an action is heavily shaped by the sequence of previous actions from which it emerges, and that social context is a dynamically created thing that is expressed in and through the sequential organisation of interaction.

Underlying this approach is a fundamental theory about how participants orient to interaction. This is clearly illustrated by making reference to (Lines 3 – 23) of the conversation transcript.

(Line 3) signals the end of the 'opening' stage with (A) asking "how exactly can I be of assistance". This establishes an invitation for (E) to perform a 'next action', by explaining precisely what information he is seeking and why. This is undertaken through (Lines 4 – 10) where (E) refers back to preceding talk in the form of a previous telephone conversation. (E) reinforces the topic focus and explains what has influenced him to seek this information. This shapes the context of the conversation and firmly establishes a 'social obligation' on (A) to provide 'help' due to the inference that (A) has successfully undertaken the task of convincing his staff to accept a particular workplace situation.

There is a further inference that with pressure to cut costs and a potential backlash from staff, that (E) is in a vulnerable position with regard to both the organisation and his immediate staff and may even suffer some penalty if he can't achieve an outcome similar to (A). This sets the platform for (A) to respond and he does so by accepting the challenge posed by (E) in his offer of help (Line 11). (A) then continues and maintains the context but in so doing, adopts an 'instructional' or 'paternal' role designed to point out that the reasons adopted by (A)'s group are quite different from those driving (E), and in fact are put in such a way as to somehow appear more noble (Lines 12 – 15).

(E) takes the initiative (Line 16) to let (A) know that what he is proposing may not be appropriate for his 'engineering' guys. There is obviously a posturing scenario being played out at this point and an inference that (E) is talking about a different 'member category' than (A), one that may not be overly keen about a 'feeling' (or 'socially' oriented) approach. This assertion by (E) demands a 'next action' by (A) who tends to turn (E)'s comment to his own advantage (Lines 17 – 19) in this minor power-play, by subtly suggesting that what (E) 'understands from the prior actions, is precisely the point. This may be an attempt by (A) to mediate the situation at this early stage by providing a 'face-saving' escape mechanism for (E) to take up.

(E) then feels morally obliged to offer an explanation for his previous statement (Line 20) and 'concedes' that if (A) "walks him through the steps", there may be some way that he could apply the advice in his own circumstance (Lines 21 – 22). This reorientation of context by (E) gives permission for (A) to renew the context, based on previous utterances, by shifting his conversation to a more specific and instructional mode signified by a "we did it this way....." type of approach (Line 23). Within this interaction, the roles of Enquirer and Advisor seem to have been re-established through a mutual jostling and finally acceptance of positioning.

This section of the conversation highlights Schutz's concept of different interests generating different motivational relevancies. "When participant roles in an activity are differentiated..... the view that one person has of what is going on is likely to be quite different from that of another" (Lemert and Branaman, 1997: 154).

## 2. Turn-taking Organisation:

In this example, turn-taking is very ordered and follows a reciprocal, enquiring – advising format. Consider for example (Line 92), where (A) presents an obvious ‘next turn’ opening for (E) by commenting that “I hope this is making sense so far.” (E) responds (Line 93 – 94) in the affirmative, maintaining the context, but at the same time expressing some trepidation or uncertainty about how his “engineering guys” will accept the philosophy being proposed. This action invites and receives a clarifying and reassuring response from (A) (Lines 95 – 97) which in turn places the onus back onto (E) to provide some context reinforcement back to (A). This is provided by (E) (Lines 98 – 99) and gives permission for (A) to continue on and maintain the context of the interaction, to which (A) responds (Lines 100....).

This short excerpt displays an ordered turn-taking organisation due mainly to the nature and context of the conversation and the roles of the participants involved. Although not ruled by or subject to special turn-taking organisation such as is the case in a courtroom setting, there is an etiquette for initiating an encounter and bringing it to an end, understood by both participants in the interaction which dictates the turn-taking organisation displayed. Goffman (1971) speaks of an individual conducting himself properly or improperly, and in this case it can be applied relative to encounters, not settings. This need not be so however, everyday conversation can be quite unpredictable in its turn-taking organisation for precisely the same reasoning, the nature, setting and context of the interaction.

## 3. Overall Structural Organisation of the Interaction:

This aspect can be broken down or segmented into component parts to help ascertain the central task orientation. Heritage (1997: 167) suggests that these distinct clusters of activity, which are co-constructed by participants, can be viewed as belonging to either the Opening; the Problem Initiation; the Problem Disposal; or the Closing phases of the interaction. Each of these involves the pursuit of a specific sub-goal and requires that “at each moment in a conversational engagement, participants.....to be sensitive to the consequences of their conduct both for themselves and for others” (Williams, 1988: 68).

In the case of the ‘Institutionality’ transcript, the Opening is achieved succinctly within (Lines 1 – 3). This is due probably to the fact that the participants are familiar to each other and this interaction is the result of a pre-arranged meeting. Following the traditional and socially ordained polite greetings, (A) provides the transition to the Problem Initiation stage by asking “exactly how (he) can be of assistance.”

The Problem Initiation is conveyed in (Lines 4 – 22) wherein (E) states the topic of concern i.e. “about office space” and a desire to find out “how it was achieved”. (A) takes up the request but also clarifies the issue (Lines 12 – 15). In (Line 16) (E) expresses some concern that the problem may be somewhat different for his “engineering guys”. (A) attempts to orient (E) to his line of discussion or reasoning (Lines 17 – 19) by suggesting that what (E) is seeing as being the problem, is in fact the whole issue; and also puts a stamp of ‘social integrity’ on his statement by mentioning the need for openness and honesty. (E) displays some reluctance that the problem has been adequately initiated, but concedes the point and provides (A) with permission to proceed.

The majority of the interaction is involved with the Problem Disposal stage and reinforces the roles initially established, as well as satisfying the need of (E) to gain information and the need of (A) to impart advice. This stage is particularly task-oriented and extends from (Line 23 – 235). This is a complex topic and as there has obviously been some prior discussion between the participants, this stage is addressed very early in and comprises the bulk of the interaction.

Closing of the conversation is initiated by (A) (Line 236) with a direct, almost blunt statement. This is mediated for (E) to a degree by a reassurance that there is reason to have confidence in addressing the problem and there is help on hand. This is perhaps (A)’s way of managing a quick and smooth exit from the conversation after what he has determined as an appropriate amount of information or advice has been imparted. (E) accepts the Closing signal by acknowledging that ‘he’ still has a task to do and seems almost to be ensuring that there is future access to this source of information by passing a complimentary remark and



expressing thanks for the time spent by (A) in this meeting. (Lines 247 – 249) are shared between the two participants who confirm that the interaction has been completed by marking the end of the occasion with 'departing' remarks and gestures.

#### **4. Sequence Organisation:**

It is apparent in the workplace conversation that the dominant participant is (A) the Advisor. Apart from the initial Problem Initiation phase where (E) sets the context of the conversation within six lines, contributions by (E) are restricted to 1 and 2 line sequences. This indicates that in the main, (E) is content to absorb the vast amount of information conveyed by (A) regarding the process followed in the office design process. As it turns out, the process is more about the culture of (A)'s group compared to the organisation as a whole, together with the work practices and processes which were analysed to determine the final spatial arrangements, than it is about (E)'s concept of imposing a physical layout on a work-group and somehow convincing them to accept the consequences.

(A) provides a number of opportunities for (E) to contribute or comment to the interaction, most of which are not taken up, resulting in long, information packed soliloquies by (A). The majority of (E)'s involvement (Lines 16, 20, 53, 77, 98, 116, 133, 146, 163 & 227) appears to come from opportunistic situations, driven by (E)'s need to reinforce that his group is 'different' and also to seek further explanation on issues raised by (A). (E) appears to spend much of the interaction, failing to see how it can apply to his situation, but (A)'s perseverance and influential arguments eventually sees (E) acknowledging (Lines 242 – 246) that the process does have merit and after being reassured that help is available, appears to satisfy himself that he has in fact got the information he was seeking.

This has implications for the process of implementing workplace design solutions and further indicates a conflict of culture even within the management levels. On the one hand, manager (A) is supportive of the process whilst manager (E) appears to be locked into an 'impose and control' model of workplace design implementation.

#### **5. Turn Design:**

As explained by Heritage (1997: 170), turn design points to "two distinct selections that a person's speech embodies (1) the action that the talk is designed to perform and (2) the means that are selected to perform the action." An important tool in the shaping of turn design can be illustrated in this transcript through the analysis of lexical choice:

#### **6. Lexical Choice:**

"Many studies.....show that speakers select descriptive terms which are fitted to the institutional setting, or their role within it" (Heritage, 1997: 174). (E)'s utterances in (Lines 16 & 20) indicate strongly that he sees the "engineering guys" as operating or existing in the organization, remote from the influences of social sensitivities embodied in what he sees as E(mployee) R(elations) or touchy-feeley aspects of the organisation. This is amplified by his description of "alien territory" and initially appears to be quite negative towards anything other than a task oriented, engineering type approach of which he is obviously accustomed to and comfortable with.

These utterances provide a valuable insight into the cultural differences and ways of organizing the social worlds between the groups of (E) and (A). (E)'s constant referrals to 'engineering guys', as explained by Coulon (1995: 22), "reveal(s) not a substantive code but a way of actualizing the code" of the engineering culture. In ethnomethodological terms, this is called reflexivity and the importance of this is that "instead of regarding reflexivity as an obstacle to maintaining and comprehending social order," Garfinkel made it a primary condition. "Reflexivity refers to the equivalence between describing and producing an action, between its comprehension and the expression of its comprehension. 'Doing' an interaction is telling it" (Coulon, 1995: 23).

(E) also uses the abjective plural as if to reinforce his own resistant stance by including all "his guys" in a collective opinion. (A)'s use of the indexical expressions: we / our / us, is for quite a different purpose. It exemplifies the fact that group processes, collaboration, and

equitable treatment are hallmarks of the culture and the functioning of the PID group. Drew and Heritage (cited in Drew and Wootton, 1988: 30) explain that “in instances such as these, speakers use the self-referring ‘we’ to invoke an institutional over a personal identity, thereby indicating that they are speaking as representatives, or on behalf, of an organization.” This interpretation is based on Coulon’s (1995: 17) assertion relative to the indexical properties of social discourse, that “words only take their complete sense in the context of their actual production, as they are ‘indexed’ in a situation of linguistic exchange.” To clarify this concept of indexicality, Coulon (1995: 20) goes on further to explain “.....that a word, because of the circumstances of its utterance, and an institution, because of the conditions of its existence, can be analyzed only in reference to the situations of its use.”

#### **7. Internal Asymmetries:**

In this particular instance, (A) maintains the initiative in the conversation and displays an example of asymmetry of institutional interaction. This can be attributed to the advisor role being played out by (A) in comparison to the enquirer role of (E). The asymmetries of knowledge to which each participant orients can be explained by the “epistemological superiority of expert knowledge” (Heritage, 1997: 178) displayed by (A)’s ability to be able to make (experiential) claims within the contextual knowledge domain of this particular interaction. Drew and Heritage (cited in Drew and Wootton, 1988: 29) claim that “it is clear that the use of (particular) vocabularies can embody definite claims to specialized knowledge and institutional identities.”

## Appendix 6.4

### Focus Group Interview Transcript

#### Participants:

Interviewer: Researcher  
 Interviewees: PID Staff (A) / (B) / (C) / (D)

Turn	Participant	Dialogue
1	Interviewer:	<i>Hi, thanks for sparing me some time to chat in your busy schedules. I'm interested in workplace culture and workplace processes and as an architect, I'm also very interested in office environments. Could you tell me please about your understanding of culture and process and also anything about your own experiences with workplace design?</i>
		[Culture]
2	(A):	My understanding of culture is that it manifests the wider aspects of a particular society.
3	(D):	Yes, it has a historical background – it reflects the historical origins of the workplace and everybody learns what it takes to get on with each other from all your past experiences.
4	(B):	I think that its individual values and experiences which influence the culture – against the backdrop of the organisation of course.
5	(D):	Like I said, its historical – its everybody's different personalities and characters thrown into a big melting pot and what comes out is a set of characteristics that everybody relates to. I guess it kind of sets the tone of the place and what's accepted behavior and what's not.
6	(A):	We, Process Improvement Division that is, have a pretty coherent and well elaborated workplace culture that everybody seems to fit in to.
7	Group:	Yer (all nod in agreement)
		[Process]
8	(B):	As for process, well that reflects the work being done, whether it's mechanical, intellectual, physical, sociological, or whatever.
9	(C):	As I see it, it's the way we get our jobs done – whether that's a rational ordered way to complete the tasks or whether it's a directive in how to do things – but that depends a lot on the management and power structures.
10	(D):	Yer there's lots of power structures and control freaks in this organisation.
11	(C):	That's true in the broad sense, but we're pretty lucky in our area – we've developed into a pretty autonomous group with a sympathetic, or maybe I should say, understanding manager who knows what's going on but doesn't interfere and lets us get on with our work.

Turn	Participant	Dialogue
12	(B):	Because we're a service provider and usually the team leaders in a project, we have a lot to say in how the work processes will operate. We have a culture of always mapping the work processes up front and getting everybody to agree with what needs to be done and who is going to do it. So even though the process for a particular job or project may be different from the last one or the next one, it's always made explicit at the outset so everybody knows what to expect. I guess you could say we are very process oriented.
13	(D):	That's a fair comment, but like (A) said, you could sum it up by saying it's all the little tasks that when you put them all together, it's the way the total job gets done.  [Culture]  Can I just get back to culture for a minute – I think culture has a big influence on how the processes happen. We used to be split into two groups, in separate workplaces and totally different ways of doing things.
14	(A):	That's right, there were lots of conflicts of personalities and lots of philosophical and sociological differences.
15	(C):	When [N] took over as Manager and rationalized the staff and bought in some new people for the Y2K Project, everything seemed to change.
16	Interviewer:	<i>Can you tell me about that change?</i>
17	(B):	I think the main reasons were.....well.....you need to compare it to the broader [X] situation which is very hierarchical, there is an inordinate amount of control and a micro management focus
18	(D):	Yer it's very male dominated, I'd say about 95%.
19	(B):	We were a predominantly young and enthusiastic group and we were all graduates from a range of disciplines. We were given a degree of autonomy and collectively we formed our work processes.
20	(A):	We were project outcomes and deliverables oriented.
21	(D):	There was a one to one balance of male to female.
22	(A):	And we created our own single workspace.
23	(B):	[X] in general is very engineer oriented, very white hat and black hat with no colours in between, by that I mean its very structured and inflexible. Most of the office space and resources are designated on a basis of seniority, authority, or power.
24	Interviewer:	<i>You mentioned that you created your own workspace, could you tell me a little more about that please?</i>  [Workspace]
25	(A):	First of all, innovation is part of PID's charter so this was an attempt by us to develop a workplace that was appropriate to and reflected our customer responsiveness. We explored how we gathered and shared knowledge and the office was set up around our processes with different spaces for different uses.

Turn	Participant	Dialogue
26	(C):	The central area, instead of being used for walls and corridor was designed as an area for group meetings, where others could hear what was going on, so they would be aware of other projects that might impact on their projects. The lack of fixed walls has also enabled a self organising system, where the work system and the people within it are able to convene and reconvene flexibly in ways that best suit the work requirements at the specific time. We have a choice of being in the large project room which can be changed around to suit a number of functions, or in the formal meeting room, or the quiet room which doubles as the library, or the one-on-one room for privacy.
27	(B):	There was a number of things that facilitated it happening, not the least of which was trust. The Manager allowed all of us to articulate our needs and wants, and this included the "open" space. We also had a willingness to experiment and open ourselves up to new experiences that we thought fitted our culture. And we weren't afraid of change.
28	(C):	We could see the importance of understanding and describing our processes and the links to the system interdependencies. This was probably a natural extension of our process planning culture and I guess provided some synergy.
29	(A):	It is evident that our core processes have been taken into account when the office was planned. Communication has increased and therefore double-ups and misinformation have been eliminated. With the combination of the openness and a sharing culture, there is no possibility of a silo-mentality developing.
30	(D):	And no empire building either, not that that would happen here.
31	(B):	There is a focus on the end-to-end process within the team and with sharing our knowledge and skills on a daily basis, this has become a great tool to be able to deliver effective and efficient solutions to the business groups. It's also really nice to have a choice of spaces to go to and to be able to personalise the whole place with the way we were allowed to decorate it – it almost makes you want to stay at work.
32	Group:	Laughter
33	Interviewer:	<i>So can you tell me anything about the benefits or disadvantages of the way the space is now arranged?</i>
34	(C):	It is now easier than before to create and share knowledge because of the range of meeting and working spaces we have, and there is certainly less wasted time and need for going over things because everybody knows what's going on.
35	(A):	The layout balances the needs of the individuals and the group even though we had to make some personal adjustments.
36	(D):	We no longer have to go home or off-site to get quiet, focused work done.
37	Interviewer:	<i>Is that what you did before?</i>
38	(D):	Yep, most of the time, but now even though we're still allowed to work from home, if we can be in the office we will be.
39	(C):	An integral part of our idea was to make the workspace more

Turn	Participant	Dialogue
		welcoming to others, so they felt comfortable dropping in to discuss issues, or seek information. For this reason soft chairs were included, located in areas designed for staff and the client managers to sit down and have impromptu discussions.
40	(B):	Clients definitely feel more welcomed with an inviting workspace. We provide percolated coffee and the perpetual availability of a meeting room. Some people have just come in to use the library, sit, browse, and read.
41	(A):	We have even had letters of compliments from external customers.... (These are displayed on the wall – extracts are quoted below). “I had the pleasure of spending much of yesterday in your very pleasant work environment. Whoever is responsible for it's creation needs to be congratulated for their effort. It takes an inspired organisation to realise that people are more productive if they are happy and contented. Well done, I am envious of your work environment.” [Len XXXXX from external organisation] “I was very impressed with the office fit out for the Process Improvement Group. It looked to me to be a relaxed and inspiring work-place that would encourage creativity. I liked the concept of the open office rather than the usual 'workstations', the communal shelving to keep desks uncluttered and the separate library area. The fittings and furniture such as the cane chairs immediately make the place look different to any other office I've seen.” [Peter XXXXX from external organisation]
42	(A):	The flip-side of this is the response from some of our own internal people. Generally, the lower down the [X] hierarchy the more positive the response. Middle managers ('Level 3') were most negative, even sarcastic. They've been heard to say that it “looks like a massage parlour”.
43	(D):	Well some of 'em ud probly know!
44	Group:	(Vigorous laughter).
45	(D):	Wot's their problem.....some of 'em really think they're so far above us.....just let any one of 'em try and treat me like a .....uhm...masseuse and I'll really rub 'em up the wrong way. They act as if we've really done something against the law when all we've done is found a better way of working and a nicer place to do it in. They need to take a good look at themselves.... After all.....aren't they the ones breaking the rules that they made. One standard for them and one for the rest is just not on as far as I'm concerned.
46	(A):	It even seems to have inspired some jealousy with expressions of “Jeez, look at the space you've got.” But we like it and we work well in it and our Level 2 manager is now also very supportive.
47	(D):	Can't see him giving up his palace to come and join us though!
48	Group:	(More laughter)
49	Interviewer:	<i>You obviously have a great deal of pride in what you've created and I'd really like to hear how you deal with the criticisers, but that will have to wait for another day, I've taken enough of your time already. Thanks very much for letting me be involved and I hope I get the opportunity to speak with you all again.</i>

## Appendix 6.5

### Membership Categorisation Device

Categories listed below are derived from the content of the focus group discussion.

Category	Category-Bound Activity / Attribute	Turn
Culture	• wider aspects of a particular society	2
	• historical origins	3
	• what it takes to get on	3
	• past experiences	3
	• individual values	4
	• personalities	5
Process	• a set of characteristics	5
	• the way we get our jobs done	9
	• rational, ordered, directive	9
	• when you put all the little things together	13
	• self organising system	26
	• group meetings	26
Workspace	• able to convene and reconvene flexibly	26
	• end-to-end process	31
	• different spaces for different uses	25
	• set up around our processes	25
	• articulated our needs and wants	27
	• personalised	31
PID	• makes us want to stay at work	31
	• a range of meeting and working spaces	34
	• welcoming (to others)	39
	• we, our, us, we're, we've, ourselves	thru'out
	• autonomous group	11
	• service provider	12
	• young and enthusiastic	19
	• all graduates	19
	• one to one male to female	21
	• created our own single workspace	22
	• innovative	25
	• gather and share knowledge	25
	• trusted	27
	• willingness to experiment	27
• not afraid of change	27	
• sharing	29	
• communicative	29	
• team	31	
• individuals and the group	35	
• laughter	44 & 48	
PID Manager	• sympathetic	11
	• understanding	11
	• trusting	27
[X] Management	• power structures	10
	• control freaks	10
	• negative	42
	• jealous	46
[X] (Organisation)	• very hierarchical	17
	• inordinate control and micro-management	17
	• male dominated	18
	• engineer oriented	23
	• very structured and inflexible	23
• resources designated on seniority, authority, power	23	
External Clients	• complimentary	41
	• impressed by PID perception management	41
	• (assumed) the wider [X] organisation is responsible	41
	• identified communal spirit	41
	• impressed by 'different' workspace	41

## Appendix 6.6

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### Focus Group Interview Analysis (based on Membership Categorisation)

The analysis indicated how the participants in the focus group interview made use of the resources of membership categorisation in order to link the categories and attributes and to explain “the courses of social action that are implied” (Baker, 1997: 142). The following discussion denotes the ‘categories’ which constituted the MCD (refer Appendix 6.5), derived from the members’ own dialogue throughout the focus group discussion. The analysis builds an image of how the participants structured the ‘social order’ of the workplace through their own understanding and application of culture and process, in and through their dialogue.

Note:

- ❑ Number shown in brackets and underlined e.g. (10) - indicates a reference to Turn 10 in the Transcript document.
- ❑ [X] is used in lieu of the name of the organisation where this was specifically mentioned in the dialogue.
- ❑ A full transcript of the Focus Group Interview and the Membership Categorisation Device formulated as part of the conversation analysis and referred to as the MCD throughout the discussion are included in Appendix 6.

#### Culture

The understanding of the meaning of workplace culture in this instance, offered by the participants, although phrased somewhat differently by each, indicated a similar perception by each and was consistent with the general description provided by the American Anthropologist, Clyde Kluckhohn (McGee, 1975: 32) in that “culture refers to ways of behaving or doing things, patterns for behavior for the members of a society. It is not the actual behaving or doing of things but the ways in which those things are done. Some of them are overt and explicit, and some are hidden and implicit.” He further defines society as “an identifiable group of interacting people inhabiting a geographically definable territory and possessing a culture of their own which distinguishes them from similar groups.” This provided a degree of confidence in the discussion about culture and the implied influence it had on group dynamics, that all participants were conceptually talking about the same thing. The inference throughout the talk was a belief that culture was “shaped by past experiences” (3) and “created a set of characteristics” (5) “and values” (4) shared by all. This learned state then shaped the behavioral aspects of the workplace interaction and further, defined the membership of that category.

The differences between PID and the larger organisation in behavioral (and thus cultural) terms was highlighted in the attributes or category-bound activities which were assigned in the MCD and permeated the focus group discussion throughout. This was most notably illustrated in the contrast between utterances (attributed to PID members) such as “autonomous group” (11); “young and enthusiastic” (19); “innovative and share knowledge” (25); “communicative” (29); “willingness to experiment” (27); “not afraid of change” (27); and (those attributed to [X] management and the organisation) such as “power structures and control freaks” (10); “very hierarchical” (17); “very structured and inflexible” (23); “negative” (42); and “jealous” (45). The continuous appearance of the ‘pronominal forms’ (Sacks, 1995a: 333) we, us, our, we’re, we’ve, and ourselves, used in this context, refers specifically to the ‘list of members’ of, and the entire category entitled the PID group. This presupposed that all members of PID were ‘members’ of that ‘category’ and as Sacks (1995: 400) emphasised, “once you make yourself a candidate, then you subject yourself to the controls that the set of members have and enforce.”

#### Process

An understanding of work processes was similarly found to be consistent throughout the group, epitomised by the statement, “the way we get our jobs done” (9 & 13). Terms such as



“rational, ordered” (9) and “self organising system” (26) were contrasted against “directive” (9) and “micro-management” (17) giving an impression of a vast difference in the work practices or processes as perceived by the members of PID compared to the “engineering oriented” (23) mindset of the larger organisation. Although the PID processes were described as ordered, “flexibility” (26) seemed to be a characteristic which permeated all aspects of the operations of the PID workplace and could be attributed to the culture of the members.

### **Workspace**

Comments from members regarding the physical workspace were offered with enthusiasm and pride, displaying a sense of ownership and responsibility for the outcome. Many of the utterances were descriptive: “different spaces for different uses” (25); “set up around our processes” (25); “articulated our needs and wants” (27); “personalised” (31); “makes us want to stay at work” (31); “a range of meeting and working spaces” (34); “welcoming” (to others) (39). The statements made not only created an image of the overall space and its ambiance, but also illustrated the embodiment of the members’ underlying culture and processes in the physical metaphors.

### **PID Manager**

The Manager of PID was described by the members as being sympathetic and understanding (11), but what seemed to be more relevant was the trust (27) embedded in the management–staff interaction. This empowered the workforce with a sense of autonomy (11) and freedom “to get on with our work” (11). It was also implied that this autonomy gave members the ability or permission to personalise their workspace (31). These are important issues in a workforce taking responsibility for and achieving a sense of ownership in their workplace. The PID Manager was referred to in quite different terms and tone compared to those used in regard to the other [X] Managers mentioned. There was a sense of mutual respect implied through both the tone and content of the utterances.

### **[X] Management and the Organisation**

These two categorisations have been discussed in conjunction as the impression gained from the focus group session was that Management, if not one and the same, was at least representative of the Organisation as a whole in terms of both process and culture. Utterances such as “power structures and control freaks” (10); “very hierarchical” (17); “an inordinate amount of control and micro-management” (17); “very structured and inflexible” (23); “seniority, authority, power” (23); described a culture dominated by formality and power related agendas. How the PID group was perceived and treated by other managers in the organisation (or at least a significant enough number to receive prominence during the interview) was illustrated by the negative (42) and jealous (45) behaviors displayed by other managers. These attitudes permeated the management ranks due to PID’s workspace being perceived as different and more spacious.

Based on comments solicited from a range of managers, PID was considered in the organisational context to be non-conformist (as distinct from their own evaluation and terminology of being innovative) and therefore, somehow a ‘threat’ to the norm. This was perhaps not a surprising mode of behavior that Management adopted against something they saw as ‘threatening’ their status quo, which was symbolised by large personal offices and private spaces. Relative to position or role however, it could be considered as inappropriate behavior and a distinct barrier to achieving progress in what was claimed to be a progressive, customer oriented, innovative organisation.

In stark contrast to the above, there were those (generally lower in the hierarchy) who chose to enter PID’s ‘world’ just to sit, browse and read in the library (40). This may have just been to satisfy their curiosity about the ‘different world’ experience. It is not unreasonable to assume on the other hand, that this sector of the organisation also did not see themselves as ‘fitting the norm’. They could be viewed as displaying some level of cultural or emotional affiliation with the symbolism of the PID workspace and to spend time within that world was in fact, to somehow gain ‘membership’ of that which was the PID category.

## **External Clients**

Unlike the internal client managers, external clients lavished praise on the PID workplace through their unsolicited complimentary letters (41). Clients appeared to be very impressed by the PID workspace and commented on such issues as the sharing and communal spirit, obvious physical manifestations of the PID culture and process elements.

An interesting observation made in one of the letters was that “it takes an inspired organisation to realise that people are more productive if they are happy and contented.” The assumption made by the client was that this was the result of an organisational initiative and not a site specific, one-off case. (As was apparent from the focus group session and with the benefit of the data obtained from the other investigation methods, the PID workspace was in fact the outcome from a workplace design ‘breaching’ experiment, quite unlike the standard organisational workplace setting.) This highlighted the danger in assuming anything without further checking of factual data.

Also interesting from PID’s point of view was that these letters were displayed on the wall for public (or more specifically, organisational) consumption. This appeared to be an attempt to convey the message to others in the organisation that there was acceptance, even envy (as distinct from jealousy displayed by internal management levels) from clients in the outside world.

## **Signs of Cultural Unity**

Throughout the focus group session, there was a reinforcement of the sense of mutual respect between members which was apparent in the earlier meeting interaction (and the subject of the Observation Analysis, refer Section 6.6). There was in general, equal contribution from all participants and although different information was conveyed in the utterances, there was a sense of a collaborative building process going on.

One of the very interesting aspects of analysis was the turn-taking of the member denoted as (D). This member seemed to seize opportunities to intervene at appropriate points in order to clarify issues or provide an almost sarcastic, even cynical emphasis to the context of the conversation with utterances such as: “there’s lots of power structures and control freaks in this organisation” (10); “yer it’s very male dominated, I’d say about 95%” (18); “no empire building either, not that that would happen here!” (30); “well some of ‘em ud probly know!” (43) – (in response to “it looks like a massage parlour”); “some of ‘em really think they’re so far above us ..... aren’t they the one’s breaking the rules that they made ..... one standard for them and one for the rest” (45); and “can’t see him giving up his palace to come and join us though!” (47).

It became obvious that these were very meaningful and deep-seated feelings, offered in a tongue-in-cheek manner without offensive intent. The group laughter which followed (44 & 48) signalled agreement with the sentiments from other members and indicated the cultural unity within the PID group. An important junction in the understanding of the process was also initiated by (D) (13) at the point when the topic focus was altered in order to explain the all important ‘changes’ which took place in the PID group prior to the formulation of the new culture and the local management support which heralded the way for PID’s innovative direction to proceed.



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