

**A Study of New Work Environments Piloted
in Scottish Enterprise National**

by

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ABSTRACT

New work environments bring together physical and social aspects of organisations in ways that create changes unfamiliar to many practitioners, and which are relatively unexplored theoretically and empirically by researchers. This thesis is concerned with increasing understanding of specific new work environments; those piloted within Scottish Enterprise National; and from this, drawing some general inferences on the nature of these environments.

Literature from the multiple strands of organisation theory, management and organisation, and built environment literatures, were brought together in this thesis in order to guide the investigation. A single case study approach was adopted, with the researcher embedded in the organisation for the duration of the research. Primary and secondary data was reviewed in an historical manner.

A descriptive and analytical form of case study write up was used in explanation and theory building of the thesis. It was established that, to increase understanding of new work environments, a conceptual level of investigation is essential. Elements emerge at this level which are not otherwise present. There is a complex mix of tangible and intangible elements that require careful consideration, to understand how the physical aspects in new work environments can contribute to organisation performance.

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Chapter 1

INTRODUCTION

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- 1.1 Introduction to the Research Aim**
- 1.2 Research Approach**
- 1.3 Overall Conclusions**
- 1.4 Structure of the Thesis**

1.1 Introduction to the Research Aim

This research aims to contribute to increased understanding of new forms of ICT (information and communications technology) supported workplace environments in organisations through empirical study conducted within Scottish Enterprise (SE). In this thesis, the term 'workplace' is taken to mean the integrated context of physical, social and technological elements of the work setting.

A review of literatures highlights that much is, as yet, unknown about the nature and impact of new work environments. There has been a lack of integrative, conceptual understanding of new workplaces with respect to relationships between people, process and technology, and how these contribute to the effectiveness of organisations (Bitner, 1992; Grimshaw, 1999; Duffy, 1999; 2000; Cairns, 2002). Grimshaw (1999) is specific when claiming there is a lack of understanding of, and research into, the relationship between man and the physical environment in relation to the workplace. Dimensions of interest are present within the multiple strands of organisation theory (e.g. Graham, 1971; Burrell and Morgan, 1979; Hassard and Pym, 1990; Martin, 1992; Scott, 1992; Hatch, 1997), but they tend to fragment to deal with parts of the subject under study i.e., the built environment or management practices, and not the holistic integration of these parts.

The theories and practices within workplaces of organisations have been reviewed and debated, with a concentration on critical work undertaken in the early years of

the 20th century, followed by a review of research throughout the 20th century until present day discussions.

Early 20th century research was interested in a form of integrative study of workplaces, particularly focused on the rational, structural and scientific aspects of organisations (Taylor, 1911; Barnard, 1938; Fayol, 1949). Within this research on workplace, people, process and technologies - although significantly different to what they are today - were considered in relation to each other and with a view to workers output. The focus was on interest in the deterministic cause and effect of changes made between these aspects of people, process and technologies in the workplaces under study, in search of the maximum efficiency level of resources.

This once established bridge between the study of physical and social elements of the work environment of organisations was fragmented by research in the middle decades of the 20th century. During this period, some researchers (e.g. Mayo, 1945; Maslow, 1954; Herzberg et al, 1959) with a focus on human relations, posited that the physical environment was subordinate to social aspects and was viewed predominantly as a 'hygiene factor' (Herzberg et al, 1959), having the ability to dissatisfy individuals, but is unable to contribute directly to either increased satisfaction or to organisation performance. Therefore, the interest in researching the physical environment further for its contribution to organisation performance diminished, and study of organisations and development of organisation theory have been largely determined by consideration of the social elements of the workplace

(Hatch, 1997, Thompson and Warhurst, 1998). Systems theories (e.g., Trist and Bamforth, 1951) retained a moderate interest in the physical environment, albeit as one element of an overall system. This interest extended to consider the interrelationships and interdependencies of one element of the system with another element, considering the organisation as a whole system rather than a formalised structure or simply a network of social relations (Smither, 1988).

In a number of fields, such as ergonomics (Bennett, 1977; Osborne, 1987; Sanders and McCormick, 1987) and environmental psychology (Russell and Ward, 1982; Darley and Gilbert, 1985; Holohan, 1986; Stokols and Altman, 1987) research continued on the physical elements, but in the main it focused on effects of tasks or events at an individual level, not at a strategic organisation level that provided the integrative perspective sought in this research.

Although key readings of organisation theory (Hatch, 1987; Carnevale, 1995; Pugh, 1999) suggest the physical environment is neglected within organisation theory, discussions do prevail in some areas of study. There is a body of literature discussing the integrative, conceptual perspective of new workplace environment in the emerging field of organisation ecology (e.g. Becker and Steele, 1995; Vischer, 1996; Duffy, 1997; Laing et al, 1998; Becker and Sims, 2001). Organisation ecology has begun to reconnect the discussions on physical and social aspects being researched in an integrated or holistic way, to enable an understanding of how they affect organisation performance. However, there are gaps in the emergent

understanding about the integration of the social and physical aspects of the work environment. Some studies seek to integrate the people, place and process aspects of the workplace but privilege the views of the top management as the users (e.g., Duffy, 1997), rather than looking across all levels of the organisation as suggested by Cairns (2002). Other studies which discuss integration, privilege the physical and technological over the organisation or social aspects (e.g., Becker, 1990, Laing et al, 1998). Overall, there is a lack of empirical studies of workplaces (Carnevale, 1995; Hatch, 1997; Grimshaw, 1999). In this thesis, a search for a greater understanding is sought: across the different elements of workplace, and across levels of organisation, one recognising the complexities of the phenomenon, via a conceptual (Bertalanffy, 1950) investigation, and supported by empirical study of new workplace environments over time.

The central contribution of this thesis is to add to the work in the organisation ecology field (e.g. Becker, 1990; Becker and Steele, 1995; Becker and Sims, 2001) in re-building the bridge between the physical and social aspects of the workplaces within organisation studies. This thesis suggests that a conceptual understanding of the integrated aspects of social physical aspects of the workplace within organisations would enable an increased understanding of their contribution to organisation performance.

At this point, I wish to clarify some of the terminology used in this chapter and throughout the thesis. Productivity and organisation performance will be discussed

and, an explanation was sought from the literature. Review of many authors' interpretations (e.g. Milkman, 1998; Ahmed et al, 1998; Wen and Lin, 1998; McGivern and Tvorik, 1998; Johnson et al, 2001), shows definitions of organisation productivity and performance that are informed by different disciplines and that have numerous possible explanations. In this thesis productivity and performance are used to describe, respectively, organisational measures of the increased levels of output (for example, more transactions processed, better quality of work produced) and personal and individual measures of the sense of feeling or attitude towards work (increased happiness or comfort).

In relation to the contribution of new ICT supported workplaces, this thesis focuses on addressing the clear gaps identified in current thinking, which are:

- limited understanding of the role of the physical environment within organisation theory
- limited understanding of the integration of the physical with other key elements, such as people, process and technology, and their holistic relationships within new work environments
- limited empirical study of these different elements and their relationships with each other, over time and across organisation levels.

Two research objectives were constructed from these gaps identified in the literature to guide the investigation, namely:

- 1) To contribute to increased understanding of the role of the physical design elements in a new work environment.
- 2) To identify the key elements and their relationships within new work environments.

1.2 Research Approach

The research approach taken in this thesis is conducted within the realism paradigm (Guba and Lincoln, 1994; Perry et al, 1996; Perry, 1998). In this, it is claimed that there is one reality, with multiple interpretations held of that reality. This philosophical viewpoint underpins the entire thesis. The data analysis is undertaken using case study method (e.g. Stake, 1981; Bonoma, 1985; Lincoln and Guba, 1985; Tsoukas, 1989; Wolcott, 1992; Yin, 1994; Perry and Coote, 1994; Adams and White, 1994; Carson and Coviello, 1996; Merriam, 1998). I presented this in a descriptive and analytical form, engaging with the readers' and my own feelings and emotions; while acknowledging that I proactively imposed my own interpretation on the analysis and, subsequently on the write up of the case study (Yin, 1994; Lee, 1999; Gomm et al, 2000).

As the focus was on building theory from the case study (Eisenhardt, 1989) it was important to map out the route to findings and interpretations in the process of the inquiry. The multiple roles held by myself as researcher, member of the group under study, and manager of the case under study was an important area for consideration within the research design. Recognising and dealing with the potential and inherent bias and conflicts these multiple roles created was crucial and required critical consideration where my own multiple role as manager, subject and researcher impacts on interpretation, particularly in the context of the findings from the research.

1.3 Overall Conclusions

In responding to the overall investigation, which is to contribute to increased understanding of new work environments, summary conclusions are offered below for the two research objectives.

In relation to the first research objective, it was found that the physical environment does play an important role in new work environments. Contrary to the literature (e.g. Mayo, 1945; Maslow, 1954; Herzberg et al, 1959), where it is advocated that the physical can only make a negative contribution, the research indicates that the physical environment can contribute both positively and negatively to productivity and organisation performance. However, within the specific case study organisation

in this thesis it has been shown that there are dependencies upon other factors, i.e. the alignment of intangible elements such as leadership and individuals attitudes towards change.

In relation to the second research objective, it was concluded that the call for an investigation of basic elements such as people, place, and processes in an integrated way is not sufficient to reveal what the more complex elements of new work environments are. The thesis finds that only when new work environments are viewed conceptually will new and vital elements be constructed that are crucial in understanding the overall complexity of these new work environments. These elements of new work environments are discussed in chapter six.

1.4 Structure of the Thesis

Chapter two of this thesis reviews several literature sets; including relevant discussions within organisation theory; general management, and from professions such as architecture and design. This review is structured around the central theme of surfacing and exploring different understandings of new work environments which originate in the pre-modern era. The main focus is on the organisation; hence organisation theory frames the discussion, and is the context for discussion of the contribution of the workplace.

Two research objectives derived from chapter two are used to guide the inquiry in chapter three. Here, I describe the philosophical viewpoint, the design of the research and the methods used. This chapter also introduces the host organisation as the case study of the research in this thesis. Chapter four begins with a more detailed insight into the case study and incorporates case study write ups that present the researcher's data analysis. Chapter five provides an interpretation of the findings from the data analysed in chapter four. Chapter six then discusses the findings and returns to address the two research objectives, and in so doing builds an explanation, and the central contribution of this research. Re-engagement with the literature is undertaken at this stage. In closing, chapter six concludes the thesis and discusses both the contribution to practice and the limitations of the research.

Chapter 2

LITERATURE REVIEW

Contents

- 2.1 Physical Environment in Emerging Organisation Theory**
 - 2.1.1 Classical Organisation Theory**
 - 2.1.2 Humanistic Theory**
 - 2.1.3 Systems Theory**
- 2.2. Physical Environment in Management and Organisation Literature**
- 2.3 Organisation in Physical and Built Environment Literatures**
 - 2.3.1 Workplace and Individuals**
 - 2.3.2 Towards Consideration of the Integrated Workplace**
- 2.4 Summary of the Literature Reviewed and Conclusions for Further Research**

2.1 Physical Environment in Emerging Organisation Theory

This chapter draws upon various literature sets in order to provide an overview of the theoretical contribution of the physical environment within organisations, and the changing nature of this contribution over time. First, it is necessary to examine the organisation literature in order to set the context for discussions and to underpin development of theory in this thesis. There are different types of organisational theories that could be used to study and analyse the type and nature of organisational activities. That is why it is worthwhile reviewing theories of organisation, in order to establish a framework for understanding the nature of the physical environment as represented in different theories (Sundstrom, 1986).

Although work organisations existed throughout recorded history, they were not subjected to serious study until the 20th century. And even then, the primary effort was directed towards giving practical advice on how to manage, rather than on gaining a deeper insight into how they work (Dipboye et al, 1994). Strati (2000, p.129) states: “The dilemma between understanding and/or managing organisation must be considered in the light of an occupational and professional community seeking power and influence in organisation settings, both those inhabited and those examined. Since their beginnings, organisation theories and management studies have been constrained by the imperative of the applicability of the knowledge produced”.

Organisation theory was identified by Pugh (1971) as a term that refers to the study of organisation design and function. The ideas that make up the body of organisation theory are numerous and varied, with no universally accepted way of classifying them, and each writer introduces a different picture (Dipboye et al, 1994). Some disciplines that can trace their origins to the study of organisations include organisation psychology (e.g. Weick, 1969); organisation sociology (e.g. Weber, 1947; Burrell and Morgan, 1979); management theory (e.g. Taylor, 1911; Barnard, 1938; Fayol, 1949) and organisation behaviour (Pugh, 1971).

Organisation theorists often justify the diversity within organisation theory and its multiple perspectives by pointing to the complexity of organisations (Burrell and Morgan, 1979; Hassard and Pym, 1990; Martin, 1992; Scott, 1992). Hatch (1997, p.7) argues: "...that is because each of the theorists encounter a large and complex phenomenon with perceptual equipment that handicaps them with respect to knowing in a holistic or total way". Many (e.g. Caplow, 1964, Bedeian, 1980) say it is a young field that will eventually work out its differences and come around to the singular perspective that, they believe, defines a mature academic discipline. However, others (e.g. Bakke, 1950; Argyris, 1959; Haire, 1959) argue that theory of organisations has always been, and always will be, multiplicative because of other fields it draws on for inspiration and because organisations cannot be explained by any single theory.

This thesis will not attempt to navigate through the depth or scope of the “complex tangle of organisations theories” (Strati, 2000, p.10). Strati (2000, p.62) identifies 22 main approaches and their principal subjects of study in organisation theory. Hatch (1987, p.5) considers organisation theory from four main perspectives. There appears to be no single or universal view of organisation theory or of the taxonomy of organisation theories held by organisation theory scholars. This thesis will select aspects of organisation theories that are of particular relevance to the consideration of the physical aspects of the workplace in organisations, recognising they are not the only movements engaged in the study of organisations, but those which can provide a context for the discussions that emerge in the sections to follow

Considering the appropriate context for discussions of the physical environment, Sundstrom (1986) has summarised three types of theories of organisation that could affect people and their physical environment. These are classical theories, humanistic theories, and systems theories.

2.1.1. Classical Organisation Theory

Classical organisation theory arose in response to changes such as the industrial revolution which brought more workers into formal organisations with structures for administering and controlling. The dominant focus of interest was on the integration of organisation structure and systems with a view to maximising efficiencies in

production (Smither, 1988), within which the physical environment was viewed as an integrated aspect of the structure.

The classical design of organisational theory was formed by different theorists. One of the founders of scientific management theory was Taylor (1911), who was seeking to affirm the optimum way to perform individual tasks that maximised efficiency and considered workers as units of production. Scientific management theory was founded upon four premises which were: finding the 'one best way' to perform the job; systematic personnel selection and placement to match the worker to each job; strict division of labour between management and workers; and monetary incentives to attract and motivate workers to perform optimally (Dessler, 1980). Taylor's (1911) preoccupation with time and motion and finding the optimum way to perform individual tasks that maximised efficiency of resources took account of aspects of the physical setting. His study of time and motion proposed configuration of workstations and environmental factors to maximise the economy of the workers' motion in production (Robbins, 1998) and consolidation of jobs by identifying unnecessary or ineffective work behaviour (Sheldrake, 1996). Hence, Taylor's concern with the physical environment went as far as to ensure it provided the most efficient means of the workers delivering output within an organisation system. Taylor (1911) is seen as a promoter of rationalisation in organisation where the focus is on the structure and system contributing to organisation effectiveness. His work is renowned for lacking consideration of individuals, or of trust and co-operation between management and worker (Bitner, 1992, Carnevale, 1992).

Weber (1946) believed that a structure of bureaucratic design would increase efficiency of production in the organisation system. He envisaged the use of “bureaus” to hold an organisation’s policies and procedures, hence, the term bureaucracy (Berry and Houston, 1993). Weber (1946) was an observer of history, and noted that the story of society and the rise of civilisation was one of power and domination. He noted that different social epochs were characterised by different forms of political rule, and that it was essential for them for two reasons: to gain legitimacy; and to develop some kind of administrative apparatus to sustain their power (Morgan, 1989).

Moreover, Weber (1946) observed that the bureaucratic approach to organisation mechanised the process of administration. Unfortunately, this mechanisation process squeezes out the human dimension. As Weber, himself, commented:

“The decisive reason for the advance of bureaucratic organisation has always been in purely technical superiority over any other form of organisation. The fully developed bureaucratic mechanism compares with other organisations exactly as does the machine with non-mechanical modes of production. Precision, speed, unambiguity, knowledge of the files, continuity, discretion, unity, strict subordination, reduction of friction and material and personal cost. These are raised to the optimum point in the strictly bureaucratic administration. Its specific nature...develops the more perfectly the more the bureaucracy is ‘dehumanised’, the more completely it succeeds in eliminating from official business, love, hatred, and purely personal irrational and emotional elements which escape calculation” (Weber, 1946, pp.214).

Weber (1946) further believed that bureaucratic design structure would increase the speed and precision of work activities, minimise the ambiguity in work roles, and reduce interpersonal friction. In other words, people would know their jobs and be able to work together as smoothly as the parts of a well-oiled machine (Berry and Houston, 1993). Weber's theory of bureaucratic management; which promoted rational and legal authority, saw the emergence and encouragement of status symbols and identifiers of hierarchy and authority in the physical environment of the workplace (Sundstrom, 1986). Similar to Taylor (1911), the focus was on the ability of the structure and systems to contribute to organisation effectiveness, within which the people were 'dehumanised' (Weber, 1946).

Functionalism, like bureaucracy, recognises the paramount importance of structure. Fayol's (1949) ideas on organisation were referred to as functionalism and the principles were influential in providing a framework for understanding the structure of many organisations (Smither, 1988). Fayol's (1949) 14 principles of organisation can be considered as an elaboration of the principles of bureaucracy in which an emphasis on departmentation, command and control, and hierarchical structures were accommodated by the physical design. However, Fayol's representation is slightly more social and less structural than Weber's (1946) study (Smither, 1988).

These classical organisation theories discussed (Taylor, 1911; Weber, 1946; Fayol, 1949) viewed the physical environment as a tool which management could use to obtain the most efficient output from workers, or a place to enable the command and

control of workers to be undertaken (Robbins, 1998). The characteristics of classical organisation theories are focused on governing the integrative parts of an organisation structure and system – within which context the physical environment is considered an integral element (Smither, 1988). However, this focus on the structure and process of the organisation to maximise efficiencies in production lacks consideration of the individual people within the organisation (Argyris, 1965), overtly ‘dehumanises’ them (Weber, 1946), and lacks consideration of aspects now considered central to organisation, such as trust and co-operation (Bitner, 1992, Carnevale, 1992).

2.1.2 Humanistic theories

In contrast to classical organisation theory, the dominant focus of interest within the humanistic theories was on the individual, or group needs within the organisation system. The general view of humanistic theories was that by paying attention to the people within the organisation, efficiencies in production and processes would occur as a consequence (Whyte, 1959). The concern with the human interest within organisation studies became a social movement towards better human relations at work (Sundstrom, 1986).

The movement can be traced to the Hawthorne studies (Mayo, 1945), which were undertaken in the 1920s, in which it was discovered that the social organisation of work could affect worker behaviour and productivity (Roethlisberger and Dickson,

1939). The Hawthorne studies (Mayo, 1945), examined the effect of the physical environment changes on workers productivity (Gillespie, 1991). These studies were initially intended to support a hypothesis of the deterministic effect of changes to lighting levels on the output of humans as units of production. However, the results of the study showed no positive correlation between the two variables. Instead, they showed lighting as one minor variable in a complex set of workplace variables (Roethlisberger and Dickson, 1939). As a result of the Hawthorne studies (Mayo, 1945), environmental aspects were deemed less critical as areas for researching, and it was concluded that employees attitudes and morale, and the influence of the informal work group were the major determinants of productivity (Mayo, 1945; Dessler, 1980; Sundstrom, 1986).

Homans (1950) observed that the social effects registered by the Hawthorne researchers were triggered by a change in the physical structure – the workers were moved to a separate space away from the surveillance of their supervisors. Homans' argument was that the new physical structure symbolised management concern for these particular workers and marked their social status. Thus, he claimed, the physical structure set the social dynamics of the Hawthorne situation in motion. Homans (1950) highlighted the importance of interpersonal relations in human group theory, in which there is a need for staff to maintain physical proximity in order to support informal contact among teams.

Maslow's (1943) need-hierarchy theory takes cognisance of the relationships of people in groups with the emphasis of his work placed upon considering people at an individual level. Within this individualistic context, Maslow (1943) states that people are motivated by five types of needs: physiological needs; safety needs; social needs; ego needs; and self actualisation needs. The social needs of workers are considered the third level of needs, in which it is said that workers need respect and social relations from their co-workers and group peers. When the workers are satisfied with the social structure, they will next want to fulfil their esteem needs – they will want to achieve, be competent and gain approval and recognition (Smither, 1988). According to Maslow's (1954) theory, the physical environment is ranked lowest in the hierarchy and required only to satisfy individual's basic needs of both shelter and security, and is only of explicit importance when removed or absent. Within this hierarchy, it is claimed the physical environment cannot contribute to increased satisfaction by merely being present. This was historically important, as it diminished the notion that the physical environment had any ability, or power to contribute to the individual's motivation or productivity (Berry and Houston, 1993).

Similar to Maslow's (1945) hierarchy of need theory, Herzberg et al's (1959) two factor theory labelled the physical environment as a 'hygiene factor'; the general proposition was that it could neither motivate individuals nor positively affect their productivity levels. However, it was stated that it could have a negative impact on their performance. Herzberg et al's (1959) two-factor theory, assumes that everyone has two types of needs - hygiene needs and motivator needs. It was believed that

attention should be paid to the motivation needs of the individual as these could contribute to organisation effectiveness, whereas the hygiene factors could not. Hygiene needs include factors extrinsic to the work itself, such as the work environment, supervision and pay. When these needs are not fulfilled the worker is dissatisfied. When hygiene needs are fulfilled the worker is not dissatisfied (Dipboye et al, 1994), but is not positively motivated as a result either. Such positive responses are entirely dependent on fulfilment of 'motivator needs', which include intrinsic factors, such as achievement, recognition, and work activities.

The works of Mayo (1945), Maslow (1954) and Herzberg (1959) assume that there is no direct relationship between the individual and their physical environment that could lead to increased work output and efficiencies in organisation production. Instead, they found that an individual's contribution to organisation performance is derived from their personal and motivational needs.

According to Lawrence and Lorsch (1967):..."these human relations ideas have not only added a good deal to our knowledge about human behaviour in organisation, but have also created a pressure on management to change the more customary way of running organisations" (pp. 178-179). Considering the relationship between individuals and management within the organisation system, McGregor (1957) pointed out that the design and operation of any organisation reflect certain assumptions about the nature of human behaviour that can be seen in the way the organisation is managed. He presented two perspectives –Theory X and Theory Y –

as philosophical positions on management (Berry and Houston, 1993). McGregor suggested gradual decentralisation, more delegation of responsibility to employees, and enlarging jobs at lower organisational levels would help employees accept responsibility, giving people a voice in the organisation, and allowing them to participate in decision making. Participation by employees in decisions relating to their work, and in the organisation, has been advocated as a motivational tool by scholars (Argyris, 1957; Likert, 1961). The key argument is that individuals who are given opportunities to participate will develop a sense of pride in their job and a consequent increase in self esteem, suggesting this might encourage employee commitment to organisational goals and satisfy personal needs at the same time (Mowday et al, 1982, Berry and Houston, 1993).

While valuable in their emphasis on the potential of psychological factors for motivation, the works of Maslow (1954), Herzberg,(1959) and McGregor (1957) have been criticised for what has been described as their ‘psychological universalist’ view of individuals motivation factors (McClelland, 1975; Giddens, 1979; Willmot 1997), and the assumption that all people will be equally motivated by higher level needs for achievement and recognition etc, is considered unrealistic by these critics.

It can be concluded from the above overview of humanistic theories that the main characteristics are their ever increasing emphasis on social inter-relations within the organisation system, in which organisational functions – such as production - are largely ignored (Smither, 1988). Within these discussions, the physical environment,

as an element of the organisation structure, is subordinate to consideration of social aspects of the organisation (Pennock, 1930; Sundstrom, 1986; Baldry et al, 1986). After labelling the physical environment a 'hygiene factor' (Herzberg et al, 1959), it was considered to be, at best, neutral to the relationship between the individual and the organisation, or only able to have a negative impact on the relationship. Consideration of the overriding influence of social factors on workplace behaviours and contribution to organizational effectiveness was favoured. Emphasis on group relations, improved communication (Homans, 1950), worker self-actualisation (Maslow, 1943), and forms of management (McGregor, 1957) were often given precedence over other areas of the organisation system. The focus of research was on the individual's needs and how the individual could be motivated or managed to increase productivity and contribute to organisation performance.

2.1.3 Systems theory

Systems theory is important in the evolution of organisation theory and in informing this thesis, because, in systems theory, it is emphasised that while all systems - and their interrelated parts, called sub-systems - can be broken down for the purposes of scientific study, their essence can only be identified when the system is confronted as a whole (Bertalanffy, 1950). In contrast to both classical and human relation schools, system theorists are in favour of a contingency approach (Scott and Mitchell, 1972) in which organisations must be studied in terms of the factors in their environments that are affecting the way they operate. Systems theory considers the

organisation to be an interrelated system, rather than a formalised structure, or a network of social relations (Smither, 1988).

Different theories emerged within the context of the system theories approach. One of them was put forward by Trist and Bamforth (1951), who provided a new concept theory named 'socio-technical theory', which emphasised the necessity of a balanced relationship between the human/social and technological systems of an organisation, and studied events from a work group, or team approach, rather than an individual one (Trist and Bamforth, 1951). The socio-technical approach grew out of a study of technology and the coal mining industry in Britain after World War II (Trist and Bamforth, 1951). Historically, miners had always worked together in small teams, with each team being responsible for a specific section of a mine. The introduction of technology into the mine had a disastrous effect on the workers. Social relationships were destroyed, autonomy and responsibility were reduced, and workers no longer took pride in their levels of skill. Outside the mine, social relationships within the mining community were also disrupted (Smither, 1988). This finding suggested that organisations should be regarded in terms of social and technical systems which are linked to economic needs (Trist and Bamforth, 1951). It also implied that change, for example, the introduction of new technology, would have resulting social and economic consequences. This study which found there was a relationship between the workers, technology, organisation design and effectiveness (Nicholson and Wall, 1982), made generalised assumptions about

structures, process and people within the system, giving no real consideration to the possibility of different system models in organisations.

Burns and Stalker (1961) proposed a mechanistic and organic system theory which recognised differences within a system, focusing on the role of management within the organisation system. They studied the adaptation of electronics, and other firms to technological changes and identified two types of management systems, referred to as the mechanistic and organic systems (Burns and Stalker, 1961). The mechanistic system is characterised by precise role definitions, centralised control, and hierarchical communication between superiors and subordinates. The organic system emphasised expertise over hierarchy, encourages lateral communication and emphasised information and advice over instruction (Burns and Stalker, 1961).

Another study was undertaken by Woodward (1965), into approximately 100 British manufacturing firms, to determine the relationship between organisational structure and company effectiveness. Her work was among the first to suggest that no one theory of organisation is applicable to all (Scott and Mitchell, 1972), and to recognise that organisations also evolve on the basis of their functions. Woodward's (1965) studies came to be known as the industrial organisation model. In her study of 100 firms, she found that, based on their organisation, these firms could be classified into three categories. The first one is the 'process production firm' which is characterised by its need to produce products in anticipation of demand. The second category is the 'mass production, or large batch firm'. The third category is 'small batch

production system' (Woodward, 1965). As a result, a new theory emerged viewing organisations as a dynamic process which involved factors of external environment affecting it.

The systems theories suggested that technology, equipment, and physical aspects have to support jobs and relationships between workers. Systems theories (e.g., Trist and Bamforth, 1951, Nicholson and Wall, 1982) treated the physical environment as one aspect of the technological component of an organisation. Systems theories conceptualised the organisation as a socio-technical system in which...“the technical organisation and the human organisation are interrelated and interdependent” (Roethlisberger and Dickson, 1939, p.79). Critics of the systems approach point to the failure of its generality, where it views all organisations as similar systems within a limited number of categories (Mayntz, 1964), with a low explanatory value with respect to the origins and development of each organisation's structure and processes, and viewing them as a relatively static entity (Burns, 1967).

Theories such as systems theories and dynamic theories begin to capture the essence of the fluctuating relationships that exist between the organisation and its environment, and, recognise the complexity of organisation existence, which can be understood from a variety of perspectives, such as; network systems (e.g., Trist and Bamforth, 1951); and as both mechanistic and living organisms (e.g., Burns and Stalker, 1961). However, in the main, the focus of research has been in the industrial era, with fairly static forms of work organisation (Burns, 1967). At the present time,

there is a need for a new type of organisation system to be understood, that is, the information and knowledge based one, where employees are encouraged to participate and interact within emerging flexible structures, where change in business, increase in the use of technology and change in workstyles forces organisations to constantly respond, and in turn necessitates changes and modifications in organisation components (Smither, 1988).

2.3 Physical Environment in Management and Organisation Literature

Modern management and organisation discussions recognise the diversity within, and differences across organisations. The new trend of management has been investigated by a number of writers in mainstream managerial literature. The work of authors such as Waterman (1982), Kanter (1989) and Handy (1989) attempts to predict the way in which future firms will need to organise and operate (Burnes, 1992). Whilst these management writers are more practitioner focused than academically inclined, and their works often lack supportive empirical data, they are recognised for contributing to and influencing the management of organisations. In the main, these authors view the organisation as an entity, albeit, consideration is given from different perspectives, and their focus is often on different aspects for discussion. Overall, interest is placed upon improving organisation effectiveness. Whilst the role of the physical environment in contributing to the effectiveness of organisation is still at the beginning stages with respect to research (Sundstrom,

1996), and within the management literature it is recognised as an important aspect of the organisation (Peters and Waterman, 1982).

Peters and Waterman (1982) consider the physical setting and the spatial distance as important factors contributing to success in organisations. Their suspicions are that their 'excellent' companies come from locations where their workplaces contribute to organisation effectiveness through increasing the individual's opportunity to be more innovative. "Physical trappings help spur the intense, informal communication that underpins regular innovation" (Peters and Waterman, 1982, p.220). Their particular emphasis of organisation study is focused on the individual and teamwork in a productive manner. Kanter's (1989) work complements and develops Peters and Waterman's (1982) by attempting to define what organisations need to be like in the future if they are to be successful. Kanter (1989) recognises and calls for a 'revolution' in organisational practice and the creation of what she terms 'post-entrepreneurial' organisation. As the post-entrepreneurial model carries profound implications for both organisations and their employees, she draws attention to three areas where the changes will have a major impact on employees: reward systems, career paths and job security, and lifestyle. In respect to worker's lifestyle, Kanter (1989) stresses the adverse cost that the very intensive work patterns can have on people's physical and mental health and on their family life:

"The workplace as a centre for social life and the workmate as a candidate for marriage is, on one level, a convenience for overloaded people who have

absorbing work that leaves little time to pursue a personal life outside. It is also an inevitable consequence of the new work force demographics. But on another level, the idea is profoundly disturbing. What about the large number of people whose personal lives are not contained within the corridors of the corporation? What about the people with family commitments outside the workplace?" (Kanter, 1989, p.285)

Senge's (1990) focus is on individuals and their behaviour as a key building block of an organisation's effectiveness. He claims employee values, attitudes, personality, and perceptions are all decisive in shaping the quality of work. Team learning is at the heart of behaviour, a process of aligning and developing the capacity of a team to create the results its members truly desire, because it explains how people develop and how they might change or improve. Senge (1990) is one of the theorists (e.g., Argyris and Schön, 1978; Leavitt and March, 1988) who have contributed to what has come to be known as 'learning organisation theory'. The emergence of learning organisations has led to an exploration of cohesiveness and strong interaction pattern of workers in workplaces:..."People should learn to react as a whole with respect to events compounded rather than to react to the single manner only" (Senge, 1990, p.6). The entire view of an organisation including people, structural levels and physical environment became of interest as the focal point of learning organisations, and to manage the organisational components vital to accomplish productivity and efficiency (Senge, 1990).

It is apparent that sweeping views of people in organisations, based upon the concepts of self control and self direction, underpin much of the popular literature on managing changes in organisations. These are manifest in expressions such as 'empowerment' (Kanter, 1983, p.156), 'empowering' (Peters, 1987, p.435) and 'man waiting for motivation' (Peters and Waterman, 1982, p.55). It is acknowledged that as organisations change their workplace, new forms of workpatterns and workstyles are emerging (Toffler, 1980, Ward, 2000), and from which, it is claimed (Handy, 1995) new timetables, new patterns of location and new boundaries between home and work are inevitable. It is suggested (Nilles, 1994, Duffy, 1997) that the onset of new technologies is moving work towards becoming information or knowledge based, in support of more nomadic, flexible workstyles. This, it is argued (Huws, 1996; Thompson and Warhurst, 1998; Cairns and Beech, 1999b; Ward, 2000) will lead to forms of flexible teleworking – defined as working anywhere with an IT link to the organisation – that have the possibility to collapse the distinction between public and private life. At the same time, these changes may produce spatially distributed work environments of organisations, in which individual work lives are further fragmented by the spatial distances inserted between co-workers, and between workers and their organisation.

There are two views of the effects of such change. First, there are those who demonstrate enthusiasm and support for the new flexible workstyle (Toffler, 1980; Willams, 1981; Schiff, 1983; Handy, 1995). Some (Williams, 1981; Schiff, 1983; Handy, 1995, Varcoe, 1995) argue for the improvement in innovation and creativity,

brought about by the individual having more control over the places and times of work – in support of liberation theory and a better work life balance. Williams (1981, p.69) paints an idyllic scene in support of liberation theory: “Human beings can be made whole again, working and living in the same community.

Microelectronics offers the opportunity of reuniting family and making commuting an obsolete and unnecessary activity”. Others (McClelland, 1975; Handy, 1995; Murphy, 1996, Lee, 1999) define the benefits of increased performance and productivity which empowers and motivates individuals.

The opposing views (Blauner, 1964; Huws, 1996; Thompson and Warhurst, 1998) are more pessimistic and sceptical of the effects of change. They argue that new flexible workstyles create a disadvantage for, and exploitation, of the individual, and that the new ‘flexible worker’ is no more than a technologically advanced home worker or production factory worker of the past (Braverman, 1974, Baldry et al, 1998). Baldry et al (1998, p.182) further argue: “If we combine office workers’ experiences of work intensification under ‘team Taylorism’ with the daily ordeal at the mercy of a malfunctioning built environment, we can see that the total reality does not seem ‘modern’ at all but almost approximates to a Dickensian sweat shop”. This argument is based partly on the assumption that these workers are self employed on menial work, such as laundry, sewing, envelope stuffing or assembly duties; or they are monitored in environments with a rigid emphasis on how they work, measuring input rather than output (Wilkinson, 1998, Thompson and Warhurst, 1998).

Considering both the proposition of the liberation theory (McClelland, 1975; Toffler, 1980; Willams, 1981; Schiff, 1983; Handy, 1995; Murphy, 1996) and that of the exploitative, de-skilling, new age, Dickensian sweat shops (Blauner, 1964; Braverman, 1974; Huws, 1996; Baldry et al, 1998), I propose that there are two realities running in parallel – which has been referred to by some as polarisation (Murray, 1995; Thompson and Warhurst, 1998; Tulgan, 1998; The Henley Centre, 1998; Cairns and Beech, 1999b). A divide is identified between the knowledge-rich, high-earning employees who are perceived as adding value, and the less skilled employees who undertake the routine work. It is proposed that there are both technologically advanced sweated labour styles of organisations and, in parallel, there are empowered and innovative knowledge workers who are experiencing the liberation sought by the flexible working.

I suggest that even this concept of polarisation is too simplistic and that there are variations between the extremes. Focusing on the organisations that are between the two poles, Beech and Cairns (1998, p.6) state: “The challenge for forward-looking managers is to avoid the worst-case scenario of technologically-enabled slavery for workers in the 21st century”. Those organisations that have been successful in moving towards the ‘high road’ - seeking effectiveness and efficiency - will be experiencing the benefits and those who are on the ‘low road’ - seeking only efficiency gains - will be facing dissatisfied employee issues (Neef, 1999, p.72). Similarly, Porras and Silvers (1991) set the challenge to be that organisations must

look at ways of improving organisational performance and increase individual development simultaneously.

These challenges of diversity within and differences across organisations are firmly recognised in the management discussions. These management discussions continue to build on the humanistic theories with an ever increasing focus on the social characteristics of organisation but recognise the importance of the physical environment within that context. As Carnevale (1995, p.7) states:

“Because physical conditions of work are so consequential, designing and constructing workplaces must be connected with operational management. Work environments have social as well as technical purposes and are an important aspect of organizational culture. People are becoming more aware of their work surroundings and are increasingly concerned about the impact physical settings have on their health, safety and work performance”.

In summing up, unlike the humanistic theories, and to a certain extent, the system theories, the management discussions are immersed in the speed and complexity of change, considering all aspects of the organisation. They consider aspects such as people, place, process, technologies, workstyles, workpatterns, and learning. There is, in the main, a holistic approach in which consideration of the individual and their relationship with the wider organisation system is considered important and necessary for the effectiveness of the organisation. It is also stated that within this holistic organisation context the physical environment of the organisation is important, and its relationship with the individual and the organisation may also be

subject to change. “The nature of the physical work environment is indeed an important factor in shaping employee attitudes on the job” (Carnevale, 1995, p.7). Hatch (1987, p.387) notes: “...physical settings support some forms of activity and constrain others. Additional research is needed to determine whether these relationships generalize to other jobs and other firms”. There is a recognised gap which calls for an empirical understanding of the relationship of the physical environment within the diversity of organisations (Sundstrom, 1986; Hodge and Anthony, 1991; Carnevale, 1995; Hatch, 1997; Gaudes, 1999).

The table 2.1 below summarises the emphasis placed on the role of the physical environment within the diverse focus of organisation and management literatures.

Table 2.1

Organisation Theory	Focus within the workplace	Role of the Physical Environment
<p>Classical Theory Taylor (1911): Scientific Management Weber (1946): Bureaucracy Fayol (1949): Functionalism</p>	<p>Dehumanised workers – mechanised process of administration. Subordination of individual interest to the general interest of the organisation. Rational, legal power Individuals viewed as units of production. Measurability. Separateness of organisations from social and societal forms. Management of resources.</p>	<p>The focus of the classical studies on the structure and processes of the organisation took account of the physical environment as a means to increasing workers efficiency or the environment in which management could command and control. And through which efficiencies in production could be achieved.</p>
<p>Humanistic Theory Mayo – (1945) Maslow (1954): Need-hierarchy Herzberg (1959): Two-factor theory Homans (1950): Human group McGregor (1957): Theory X and Y Argyris (1957): Developmental</p>	<p>Motivation associated with social aspects of individuals. Interaction between workers and emphasis on group norms. Emphasis on workers potential and freedom in workplace. Value employee human aspects – satisfy personal needs.</p>	<p>Humanistic theories focused upon the individual and group needs to achieve organisation effectiveness and took little account of the physical environment. The physical environment was viewed as a hygiene factor with no ability to motivate individuals or contribute positively to the performance of organisation. Interest was only retained if it hampered the personal growth of staff.</p>
<p>Systems Theory Trist & Bamforth (1951): Socio-technical Burns & Stalker (1961): Mechanistic & organic Woodward (1965): Functionalism</p>	<p>Seeking optimal relationships between technical and social aspects of organisation. Consideration of integrated aspects of organisation. Emphasis on individuals, interactions, and hierarchical relationships. Seeking to identify parts of the system and their inter-relationship. Generalised theories with limited numbers of categories.</p>	<p>The focus of systems theories on the organisation as an integrated entity viewed the physical environment as an integral technology within the organisation system.</p>
<p>Management and Organisation Literatures Peters & Waterman (1982): Entrepreneurship Kanter (1989): Post-entrepreneurship organisation Drucker (1992): Knowledge organisation Handy (1989-94): Knowledge organisation Senge (1990): Learning organisation theory Blauner (1964), Huws (1996): Exploitation theory</p>	<p>Focus within the workplace Achieving organisation excellence through individuals and teamwork. Importance of teamwork with emphasis on empowerment of individuals. Participative management for organisation effectiveness. Transferring knowledge and information between workers – intelligence building amongst them for the benefit of the organisation. Organisation thinking. Exploitation of individuals through controlled organisation environment.</p>	<p>Role of the Physical Environment The focus on the organisation as an interrelated entity gave consideration to the physical environment as an important aspect within it. Recognised for its ability to contribute to organisation effectiveness via its influence and relationship with the individuals and social aspects.</p>

In summarising organisation theory and management literature, it can be seen that the role of the physical environment varies dramatically. Among the classical organisation theories (Taylor, 1911; Weber, 1945; Fayol, 1949) the focus was on achieving organisation effectiveness through manipulation and control of the structures and systems of organisation. The physical environment was an integral part of the system, however, individuals were largely 'dehumanised' in the system. The humanistic theories (Mayo, 1945; Maslow, 1954; Herzberg et al, 1959) focused on achieving organisation effectiveness through paying attention to the motivational and social needs of individuals. In this, the physical environment was viewed as a 'hygiene factor' (Herzberg et al, 1959) and placed it in a subordinate position to the social aspects of the organisation in terms of its contribution to organisation effectiveness. Systems theories (e.g. Trist and Bamforth, 1951) focused on the socio-technical aspect of the organisation, emphasising the interdependence among all organisation components, particularly the fit between social aspects of the organisation and technology which included the physical environment (Trist and Bamforth, 1951). Much of the system theory work was generalisable (Mayntz, 1964), not contextual to different organisations and often viewed them as static (Burnes, 1967) relative to current organisations. Within the discussions of management and organisation, where diversity of organisations systems is considered (Handy, 1989; Drucker, 1992), the role of the physical environment is recognised as an important aspect of the holistic organisation (Peters and Waterman, 1982) – linked with consideration of the individual in the contribution to organisation effectiveness. However, no empirical studies are identified in support of this

argument. Instead the interest is placed upon managing resources, empowerment, participation, and sharing of knowledge to increase organisation innovation and effectiveness (Kanter, 1989, Senge, 1990).

A review of some literatures (Pfeffer, 1982; Bitner, 1992; Carnevale, 1995; Hatch, 1997; Cairns, 2002) has highlighted that there is a lack of empirical research into the complex relationship between the social elements of the organisation and the physical environment within the study of modern organisations. Whilst there is a recognition that an individual's behaviour is shaped, to certain extents, by the design of their organisation's physical environment, theoretical or empirical knowledge is not well developed in these discussions (Pfeffer, 1982, Thompson and Warhurst, 1998).

The section to follow will build on the discussions and consider the role of the physical environment from the perspective of the built environment literatures. More specifically, the section will focus on the integration of multiple factors within the workplace, of which the physical environment is recognised as one alongside the social and technological factors. Systems theories emphasise that, while all systems can be broken down for the purposes of scientific study, their essence can only be identified when the system is confronted as a whole. To comprehend the system you must not merely analyse or synthesise, you must be willing to transcend the view of the individual parts to encounter the entire system at its own level of complexity (Bertalanffy, 1950). Similarly, authors such as Becker (1990); Laing (1993); Becker

and Steele (1995); Duffy (1997); Robertson (1999); Cairns (2002) have written in support of an integrated approach for the future of effective research – i.e. research that would be meaningful to management and organisation study. Empirical research that begins to rebuild the bridge between the study of social and physical elements of the workplace, in relation to the individual in support of the organisation.

2.3 Organisation in Physical and Built Environment Literatures

There are several views held within the built environment fields regarding the role of the physical environment and how it connects with individuals and the organisation in different ways. Some (e.g., Bennet, 1977; Russell and Ward, 1982; Osborne, 1987) look at the relationship from a micro perspective, focusing on the individuals and aspects of their immediate environment. Others (e.g., Canter, 1974; Hillier and Hanson, 1984; Dovey, 1999) look at the relationship from a macro perspective, considering how the individual is affected by their immediate environment and, consequently, how this relates to organisation effectiveness.

The micro level discussions, which focus on the individual and their immediate surroundings, are present in fields such as environmental psychology and ergonomics. Research on the built environment (Darley and Daniel, 1985; Holohan, 1986; Russell and Ward, 1982; Stokolos and Altman, 1987) is only one aspect of environmental psychology and it focuses particularly on the individuals behavioural

reaction / response to the physical environment. This work has pushed the study of the relationship between human behaviour and work setting into prominence, covering effects of aspects such as crowding and noise, varying temperature, types of art and colours on psychological wellbeing and behaviour (Russell and Ward, 1982). As Bitner (1992, p.17) states:..."Much of empirical research in environmental psychology has illustrated effects of the spatial layout and functionality dimension, always from the employee's point of view". Similarly the field of ergonomics has addressed human physiological responses to objective ambient conditions – such as temperature, air conditioning, lighting, as well as to equipment and furniture design – such as employee workstations (Bennett, 1977; Osborne, 1987; Sanders and McCormick, 1987). Such research systematically applies relevant information about human capabilities and limitations to the design of objects, and to procedures people use (Bitner, 1992).

The dimensions of the physical environment include many objective physical factors that can be controlled (to a greater or lesser extent), such as layout, furniture, colour, temperature. Often these factors are used by the organisation in attempts to enhance or change employees actions (Bitner, 1992, Carnevale, 1992). However, the effect of a single factor on employees is difficult to forecast. Within these fields of environmental psychology and ergonomics the factors are regularly isolated for researcher purposes and then general patterns are explored. Several empirical studies show a positive relationship between the adequacy of objective environmental conditions and job satisfaction. For example, job satisfaction has been related to

office openness (Schuler et al, 1980), density (Szilagy and Holland, 1980), privacy (Sundstrom et al, 1982), smoking policies (Frank and Carnevale, 1986), noise (Brookes and Kaplan, 1972), illumination (Farrenhopf and Roth, 1980). However, the scope of the research does not extend beyond the objective study in relation to the individual. Studies undertaken by Stallworth and Otto (1996, p.8) concluded that: "...although environmental factors play a role, it is complex and that the physical/environmental aspects of the individual alone cannot account for the complexity of performance or satisfaction". Carnevale (1992) argues that more strategic or holistic discussions about the physical environment; on issues such as power, access, and control; are pushed into the background in the name of functional and instrumental priorities. Recognising the complexity of the relationship the physical environment has within the organisation, Cairns (2002, p.817) states:..."The physical environment and social environments contain one another, frame one another and influence the development of one another, but they are not as one".

From a macro perspective, some (e.g. Hillier and Hanson, 1984; Dovey, 1999) argue that interior spatial structures, through their ability to control, are deterministic of behaviours within organisations and, discussions on architectural determinism (Lee, 1971, Canter, 1974, Dovey, 1999) suggest that space shapes human behaviour. This extreme deterministic view is an inversion of the humanistic model (Maslow, 1943; Herzberg et al, 1959) which claimed the physical environment had no ability to contribute positively to the individual or organisation performance.

Dovey (1999, p.89) considers Winston Churchill's deterministic viewpoint: "We shape our buildings, and afterwards our buildings shape us", and provides a more subtle belief on the ability of buildings to shape human behaviour stating: "While I do not believe that spatial design causes this behaviour, it can sustain it and therefore aid its reproduction". Less extreme deterministic views are proposed by others (e.g. Laing, 1993; Duffy, 1997; Laing et al, 1998) who suggest that there is a correlation between the physical environment and social aspects of the organisation, and within that context the physical environment has an ability to shape behaviours.

Contrary to the deterministic view that reforming workspace can directly impact individual behaviour (Hillier and Hanson, 1984, Dovey, 1999) and hence business performance (Duffy, 1997, Laing et al, 1998), Vischer (1999, p.28) invited commentary from a president of a US based company with over 3 million sq. ft of office space, who stated: "You may succeed in business despite your space, but you seldom succeed because of it". Providing, arguably, a more realistic view of the relative importance of the physical environment within the study of workplaces of organisations, some (e.g. Bradley and Osborne, 1998; Thompson and Warhurst, 1998; Neef, 1999) argue that the physical environment is one part of a critical set of integrated policies and practices that will boost an organisation's competitive position in the new knowledge based economy. However, as empirical studies are lacking in this area the deterministic effect of the physical environment is relatively unexplored.

Those with a macro perspective appear to be aware of the neglect of the study of the physical environment within organisation research and the connections with social aspects of the workplace (Duffy, 1968; Duffy, 1998; Grimshaw, 1999; Cairns and Grimshaw, 2000). In the late 1960's, Duffy (1968, p.9) was cognisant of the neglect of the physical environment within organisation studies:

"I suggest that rather than neglecting the relation between buildings, organisation and behaviour, it is sanest to try to design buildings and organisations which permit all possible behaviours to coexist without coming into conflict...real coexistence in their entirety, of apparently conflicting sets of tendencies such as the management's wish to get so much work done and worker's wish to be able to feel at home in the office."

Thirty years on since then, Duffy (1998, p.33), in recognising the broader limitations of research in this field states:

"The relationship between buildings and people is a wide, ill defined field which can be studied in as many ways as there are branches of science - from cultural anthropology to the boundaries of clinical psychology - but with little chance of clear-cut guaranteed success."

In summary, it can be seen that the micro level focus, which considers the relationship between the individual and their immediate environment, does not consider the relationship in the context of organisation effectiveness (Bitner, 1992, Carnevale, 1992). From the macro level perspective there are a variety of views held about the deterministic ability of the physical environment, in relation to individual

behaviour and to organisation effectiveness, but there is little empirical evidence to substantiate many of the assumptions made. The range of views, and the lack of empirical study highlights the gap in understanding the relationship between individuals and the physical environment, in relation to organisation effectiveness (Carnevale, 1992; Duffy, 1998; Cairns and Grimshaw, 2000).

2.3.1 Towards Consideration of the Integrated Workplace

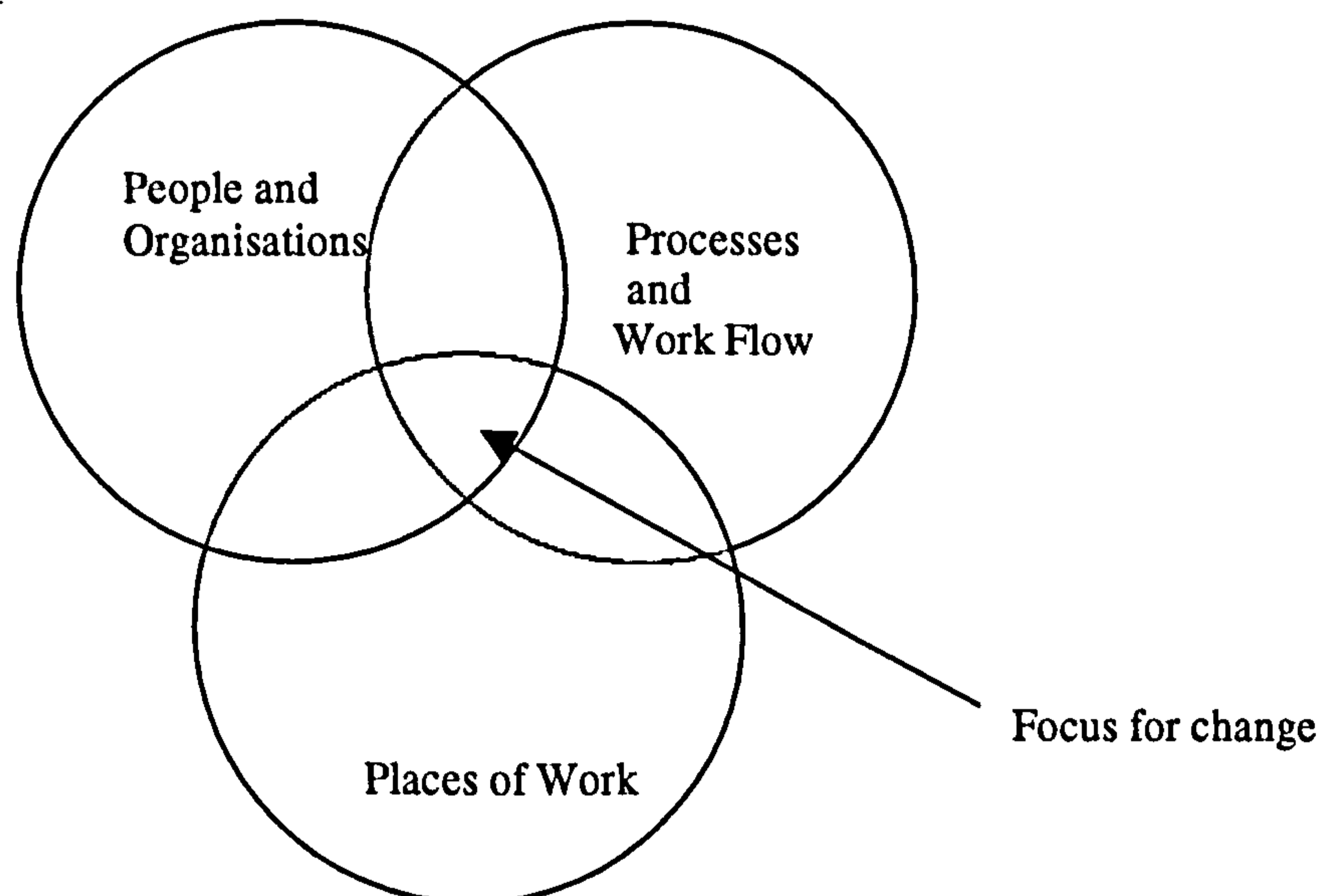
Some discussions within the built environment (e.g., Becker, 1990; Becker and Steele, 1995; Worthington, 1997; Laing et al, 1998; Duffy, 2000; Becker and Sims, 2001) literatures take an holistic and integrated approach towards considering the social and physical aspects of the workplace. Within that context the physical environment is recognised for its ability to influence individuals and contribute to organisation effectiveness.

Some studies (Worthington, 1997, Duffy, 1999) focus on the integration of the physical environment into the wider organisation system, and on change within the workplace in order to maximise the impact of the physical structure on improving organisation performance (Laing et al, 1998; Duffy, 1999; Duffy, 2000). The work of authors (e.g. Duffy, 1995; Laing et al, 1998; Grimshaw, 1999; Duffy, 1999; 2000) is noted for putting forth the viewpoint that an appreciation of the social purpose of the workplace is essential in achieving returns from the physical environment.

Bradley and Osborne (1998) conclude from their research that an integrated approach

to workplace reform and change management is the key to successful transformation, and that by incorporating people, place and process aspects, gains in efficiency and effectiveness can simultaneously be achieved (Worthington, 1997; Duffy et al, 1998; Bradley and Osborne, 1998).

Figure 2.1

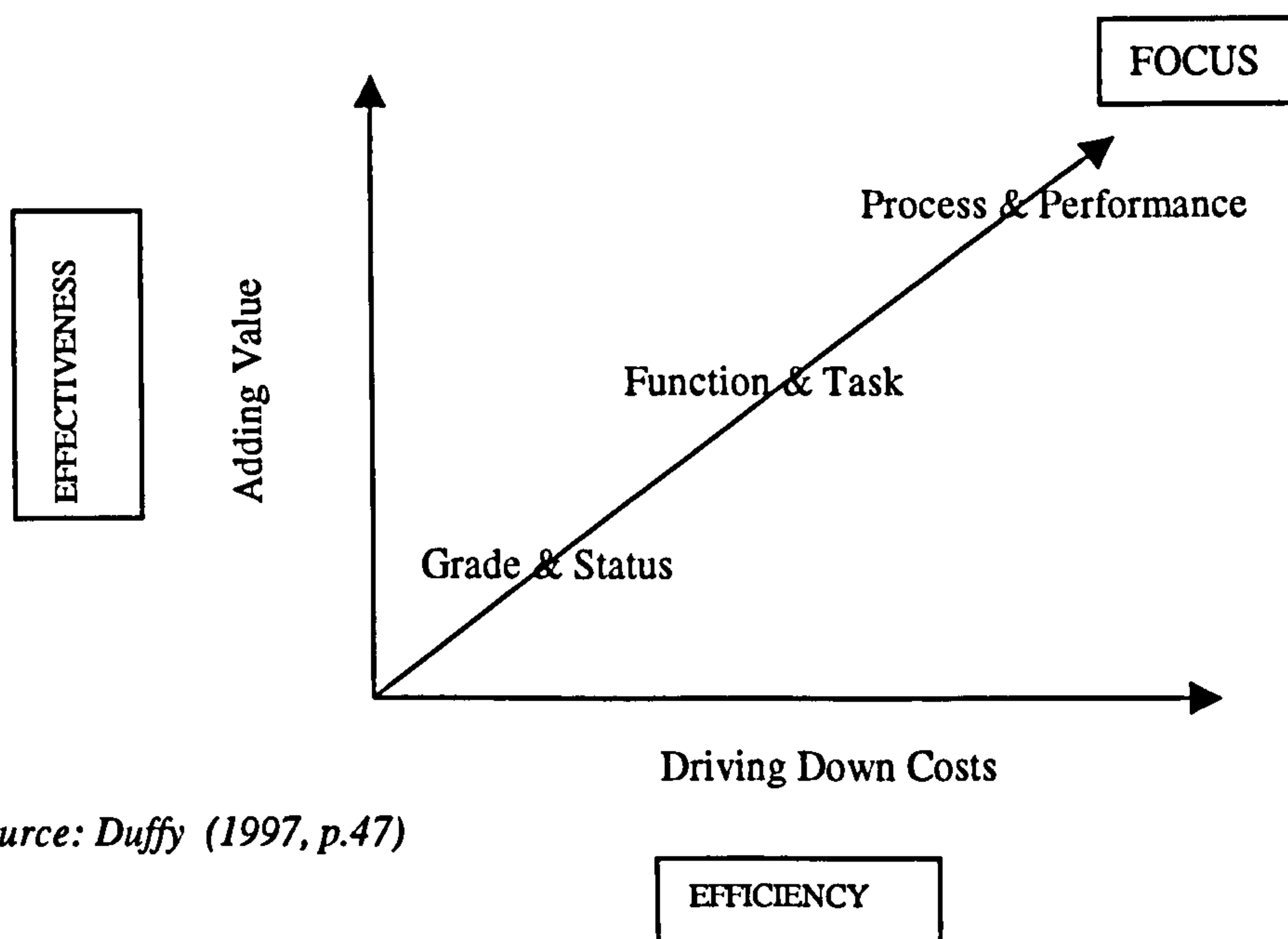


Source: Worthington (1997, p.47), Blyth and Worthington (2001, p.26)

Considering the contemporary management challenge within organisations of choosing between the efficiency or effectiveness agenda, Duffy (1995) suggests that organisations should learn to work both aspects simultaneously. Duffy (1997) has tried to be more specific regarding the factors to consider, with a particular focus on explaining the efficiency and effectiveness criteria of the physical environment. As illustrated in his model below (Figure 2.2) when organisations are least effective and efficient the focus on 'control' factors and symbols such as grade and status are prominent in the physical environment of the workplace, and conversely when the

focus is on organisation or individual performance, the emphasis on status symbols and control is minimised.

Figure 2.2



Source: Duffy (1997, p.47)

Pfeffer (1982) points out that authority is often inferred from symbols that powerful members of an organisation acquire. Such symbols include décor, size of one's office and/or location. Thus, Duffy (1997) argued that, in this scenario of balancing the effectiveness and efficiency agendas, the traditional focus for incremental rewards of status and longevity – a larger desk, more individual space, more carpet, more enclosure – has no place or meaning.

The 'Total Workplace' concept (Becker and Steele, 1995) is described as an integrated workplace strategy that:..."defines a workplace in two ways: through the scope of the physical settings considered and through the social process used to plan

and manage and link the physical settings over time” (Becker and Steele, 1995, p.14). There are different approaches and views about the important aspects of the workplace design within the ‘Total Workplace’ or new work environment concepts, where some (Becker, 1986, Duffy, 1997) focus on the visuals of the workplace, using bold colours to create a sense of vibrant new space. They also build in a broader range of collaboration, shared and mixed workspaces – different to the standard allocation of desk or office. The general aim is to reduce physical barriers in the workplace and introduce the concept of having flat and flexible organisation structures (Duffy, 1997; Laing et al, 1998; Becker and Sims, 2001). Another view focuses on the invisible or intangible elements within the design of a workplace (Scuri, 1995), factors beyond those that can be seen and measured, but which are of vital importance in the workplace, suggesting that our first immediate reaction to our surroundings is of an emotional nature; accordingly, our emotions allow us to form an idea, or more precisely an impression, of the surrounding environment.

I propose that the principle aims of the ‘Total Workplace’ (Becker and Steele, 1995) and these discussions on spatial designs to match organisation needs, are attempting to match workspaces to workstyles and offer choices to the individual based on the tasks they are performing, not based on traditions of bureaucratic or scientific management (Taylor, 1911, Weber, 1945), hierarchy and status (Fayol, 1949), nor on routine space planning allocations (Grajewski, 1990). The approach of the ‘Total Workplace’ concept (Becker and Steele, 1995) which fosters the need for team-work, knowledge sharing and the importance of informal contact to improve creativity and

innovation within the organisation reflect the concepts of the systems theories (Trist and Bamforth, 1951), and mainstream management literatures (Peters and Waterman, 1982; Handy, 1989; Senge, 1990) through emphasising the importance of the social aspect of the organisation, and recognising the role of the physical layout of settings in supporting organisation objectives, but with added dimensions of workers mobility, flexibility, and contextual specifics recognising that not all organisations are similar or have static structures.

Matching Organisation Characteristics to Workplace Design

It has been expressed by many within the built environment fields (e.g. Becker, 1990; Becker and Steele, 1995; Worthington, 1997; Duffy, 1997; Laing et al, 1998) that the design of office buildings has often not been closely related to the needs of the organisations that use them. It is advocated (Becker and Steele, 1995; Duffy, 1995; 1997; Laing et al, 1998; Becker and Sims, 2001) that spatial design should be related to workpatterns and workstyle changes to yield a better return from facilities and to support individuals to be more productive (Becker and Steele, 1995, Duffy, 1997). Most of these discussions are based on assumptions that knowledge work will be the dominant forms of work within organisations of the future, and within that context, workers will act upon information as their raw material (Costello, 1996). Other assumptions which are made are that individuals workstyles will include a mix of collaborative team work, private and / or concentration work and

hence, will require an environment and technologies that are supportive of differing tasks, multi-functions and multi-locations (Laing et al, 1998, Duffy, 2000).

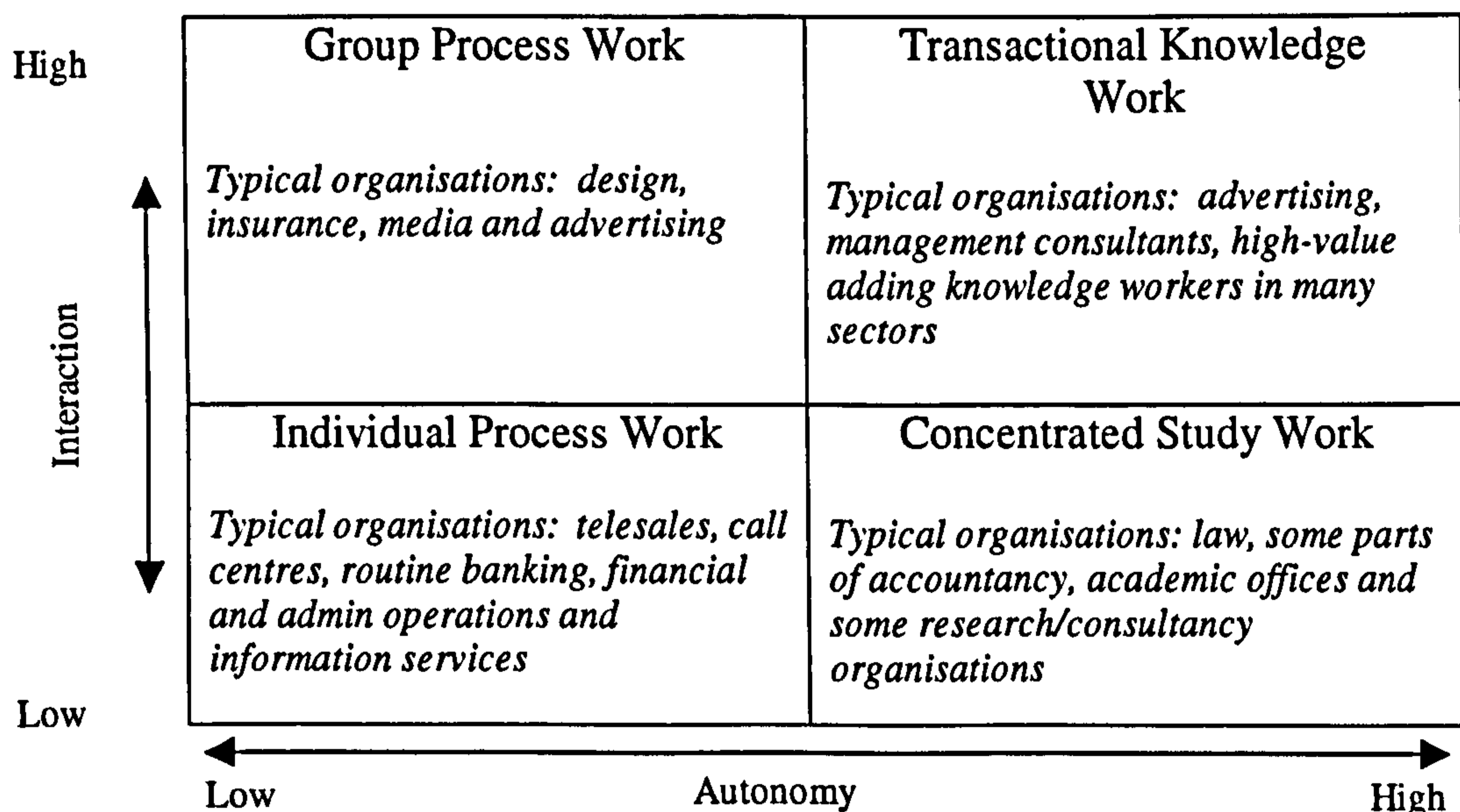
There has been limited study into the recent changes in office environments in relation to their effects on other organisation aspects (Worthington, 1997). Duffy (1997) has compared the characteristics of conventional offices to new work environments. They are presented in Table 2.1 of this thesis, not to unequivocally agree with them, but to present some insight from the limited comparisons offered by the literature.

Table 2.2	Conventional Office Assumptions	New Ways of Working and New Office Environments
Patterns of work	Routine processes Individual tasks Isolated work	Creative knowledge work Groups, teams, projects Interactive work
Patterns of occupancy of space over time	Central office locations in which staff are assumed to occupy individually 'owned' workstations on a full-time basis, typically over the course of the 9-5 day. The office assumes one desk per person; provides a hierarchy (planned or enclosed); and is occupied typically at levels at least 30% below full capacity.	Distributed set of work locations (which may be nomadic, mobile, in the office or at home) linked by networks of communication in which autonomous individuals work in project teams. Daily timetable is extended and irregular. Multifunctional work settings are occupied on an as-needed basis. Daily occupancy of space near to capacity.
Type of space layout, furniture systems, and use of space and buildings	Hierarchy of space and furniture related to status. Individual allocation of space predominates over interactive meeting spaces.	Multiple shared group work and individual task-based settings. Setting, layout and furniture of the office geared to work process and its tasks.
Use of information technology	Technology used for routine data-processing, terminals in fixed positions served by mainframes.	Focus on mobility of IT equipment used in a variety of settings. Technology used to support creative knowledge work, both individual and group. File servers serve a variety of tools, including pc's and laptops and shared specialised equipment.

Source: Duffy (1997, p.58)

Building on this, using empirical data gathered via case study approach from eight organisations across Europe and America, Duffy (1997) makes attempts to link the type of organisation to the ‘right’ physical environment, suited to its business needs. The use of four idealised organisational types are predicted, as shown in Figure 2.3 below:

Figure 2.3

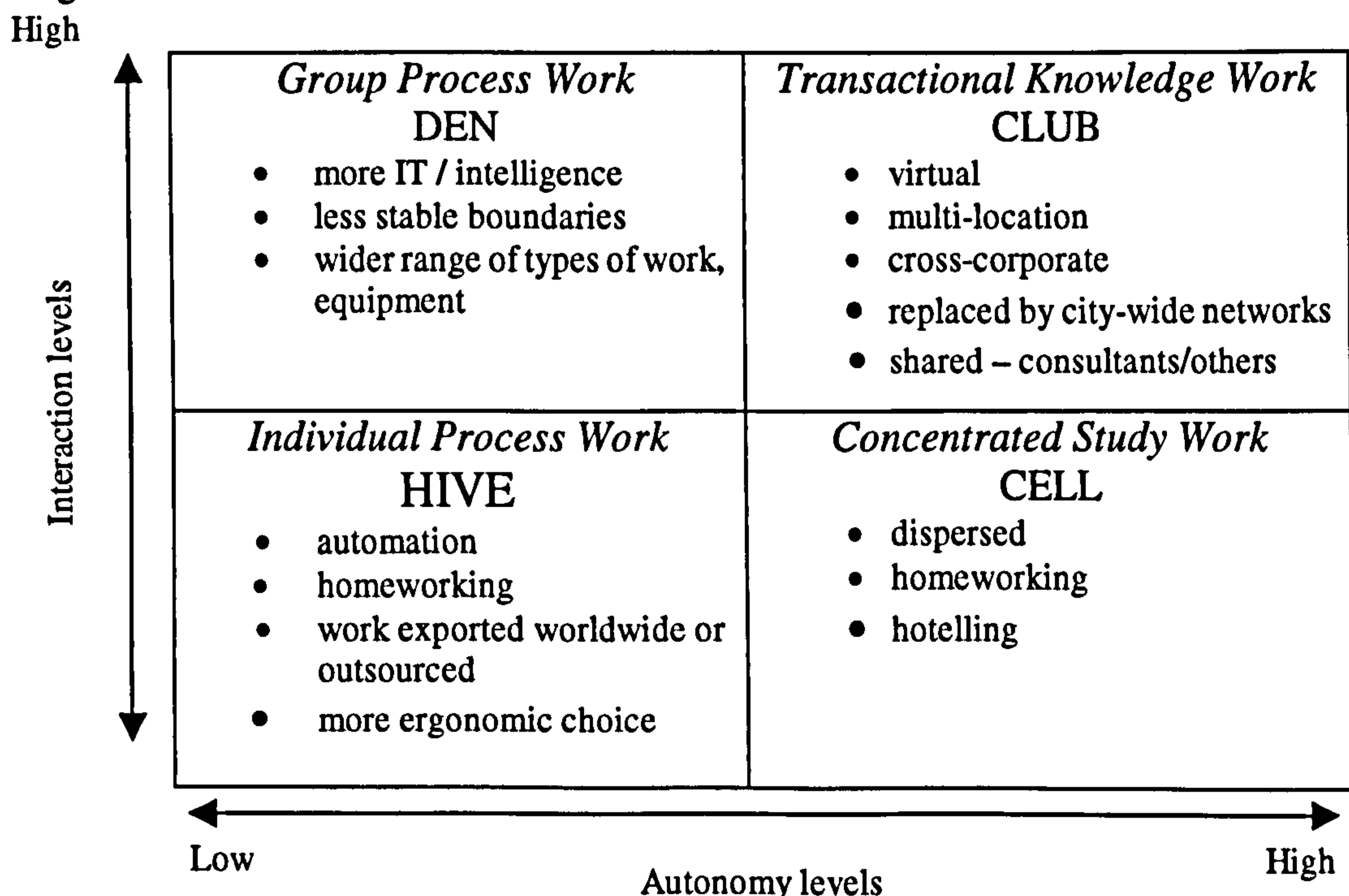


Source: Duffy (1997, p.61)

Duffy (1997) found that knowledge workers act on information as their fundamental raw material. They work alone and as part of collaborative teams; they are multi-disciplinary and need privacy to facilitate concentration. Hence, he concluded, knowledge workers need an environment that is supportive to these differing tasks and multi-functions and is conducive to individual’s growth and learning. In an

attempt to relate organisational patterns of work and their spatial consequences, Duffy (1997) and Laing et al (1998) devised four metaphors to describe worksettings within the office: namely *hive*, *den*, *cell* and *club*. The four metaphors are shown in Figure 2.4 below with their relationships to individuals' autonomy and interaction needs.

Figure 2.74



Source: Laing et al, (1998, p.67)

Becker and Sims (2001, p.10) discuss similar concepts such as 'bullpens' and 'pods' as new worksettings to reflect and support new workstyles. The principle remains the same: they are attempting to match workspaces to workstyles and offer choices to the individual based on the tasks they are performing, not based on traditions of hierarchy and status, nor on routine space planning allocations. The approaches

outlined above indicate holistic consideration of physical, social and technological contexts of work. However, as with systems theory they outline a limited number of generalised models or categories. Also, they take the characteristics of organisation and their relationship with office design so far, but they are criticised (Cairns and Beech, 2000) for their simplistic view that workplace redesign is a singular or isolated event, when the implications and effects of such redesigns often have consequences spanning beyond the event, and therefore should be considered as a process over time.

In Pursuit of Organisation Effectiveness

It can be seen from the works of some (Duffy, 1995; Worthington, 1997; Laing et al, 1998; Duffy, 2000; Becker and Sims, 2001) that there has been an ongoing relationship developing between the task activities of individuals, types of workspaces, and changing structures of organisations in pursuit of organisational effectiveness. However, there have been few empirical studies published in support of these discussions (Grimshaw, 1999) and there is contradictory evidence presented within what has been done.

Some empirical studies focus on the relationship between the individual and their immediate worksetting but do not consider the effects on organisation effectiveness (Oldham and Brass, 1979; Oldham and Rotchford, 1983; Hatch, 1987). An empirical study was undertaken by Oldham and Brass (1979) to examine changes in reactions

of employees to work after they moved from a conventional office to an open-plan office. The study was conducted within a newspaper organisation and the objectives of the move to new office facilities were; to be more appropriately located for transport links; obtain better environmental facilities such as heating/air conditioning and storage space; and to create an environment conducive to the communication needed between departments and individuals. Prior to the move, all staff interviewed reported that the move was necessary as the current facility did not adequately support the needs of the organisation. The study involved three, one-off interventions with the research subjects, one pre-move and two after the move had occurred. A questionnaire was used to gather data 8 weeks prior to the move, then two more data sets were gathered at weeks 9 and 18 post move. Informal management discussions were also undertaken to gather supplementary data. There was a control group set up – staff from the press room – who were already working in an open plan environment within their current facility. These were the only staff who worked in an open plan layout currently, all other staff would be moving from conventional to open plan. Therefore, it was predicted that the responses of individuals in this control group would not change as a result of the move if, as proposed, the open plan office is responsible for changes in employee reactions to work (Oldham and Brass, 1979).

The results of investigation into each of the variables - there were 15 variables such as work satisfaction, skill variety, friendship opportunities etc - were considered independently and then grouped to show the multivariate effect. The data strongly

suggested that employee satisfaction and internal motivation declined substantially after the move to the open plan layout. This finding was consistent in the 9 and 18 week data sets post change. In the qualitative data gathered individuals complained of the inability to hold private conversations, lack of concentration and continual distractions:..."the new office is noisy; it is hard to concentrate and difficult to do a good job" (Oldham and Brass, 1979, p.280). The findings of the study opposed the predictions of social relations theorists (Bach, 1965, Zeitlin, 1969) who predict that satisfaction and motivation will increase in the move to open plan layouts, as the physical barriers reduce. The study supported the predictions of the socio-technical theorists (Rice, 1958, Cummings and Griggs, 1976), who predict that satisfaction and motivation will decline in the move to open plan as decreases in job characteristics: autonomy, task identity, supervisor and co-worker feedback, may occur.

The results overall support the proposition that the physical context of an organisation has important implications for the quality of employees' work experiences. In particular it showed that employees' motivation and satisfaction with work and colleagues declined sharply after moving from the conventional to open plan office. The control group who moved from open plan to open plan with no real difference in physical properties, showed no change in satisfaction and motivation during the course of the study (Oldham and Brass, 1979). This could suggest that the physical environment for this group was experienced as a 'hygiene factor' (Herzberg, 1966), where it merely satisfied their needs.

In this study, there was no regard to worker efficiency:...“unfortunately it is not yet clear how various contextual properties such as structure, physical layout and technology interact with one another in influencing job characteristics and employee work outcomes” (Oldham and Brass, 1979, p.282). It was suggested that it would have been worthwhile undertaking a further investigation sometime after 18 weeks as it was suspected that staff may settle and begin to accept the new environment over time (Oldham and Brass, 1979), hence after 18 weeks the results may differ.

Hatch (1987) criticises the research undertaken by Oldham and Brass (1979) as it was conducted on aspects of organisation at a task and detail level restricting their interest to effects on activity. She claimed they did not investigate the conceptual understanding of elements, their interrelationships with each other or their relation to organisation performance. No consideration of productivity was given from the ambient and objective focus – this could imply that staff were busy undertaking unproductive activities or that subjects reports of personal satisfaction and motivation may have had no effect on their overall work output.

An empirical study was undertaken by Hatch (1997) to investigate conventional and open plan offices. The focus was on the relationship between physical barriers - defined as doors, walls and partitions (Archea, 1977) - and type and amount of interaction within the workplace. The investigation was carried out in two high technology organisations with a mixture of conventional and open plan office

layouts. An exploratory approach was used, and multiple methods including self-reported-activity logs, observations and interviews were used.

Hatch's (1997) findings show that where physical barriers (doors, walls and partitions) were present there was a higher level of interaction among users, for example, individuals in offices with higher partitions reported more time spent working together and in meetings than did those with lower partitions. Individuals in offices with a greater number of partitions or walls reported spending more time on the telephone. The assumption that can be found in the literature (e.g. Becker, 1981, Sutton and Rafaeli, 1987) that a lack of physical barriers increases interaction among office workers is challenged by the findings of this research report and, it is proposed, such assumptions may be erroneous (Hatch, 1997).

The study findings were based on exploring the relationship between enclosure (partitions, walls or doors) and the amount of time individuals reported interacting with others – in which it was found that there was a positive association, the more physical barriers the higher the level of interaction. Both Oldham and Brass (1979) and Hatch's (1997) empirical studies found that the reduction or removal of physical barriers (which are typical in conventional office layout) decreased the amount of interaction among co-workers. However, there was no further investigation into the relation between levels of interaction and efficiency or with work output. Hatch (1997) states: "research is needed to assess the causal relationships between physical

barriers, interaction activities, and important outcomes such as performance” (Hatch, 1997, p.398).

In light of current developments in the management literature, the results of these studies are less reliable. The reasons for the weaknesses of these studies are that they have measured work environments using approaches that were primarily developed to examine the work environment of the 1960s or earlier, which were more stable, homogenous and less threatening than the current work environments. Although the traditional work environment factors used in these scales (e.g., task characteristics, job profile) are still important, some other recent factors such as innovation and knowledge are viewed more important and/or relevant in today’s workplace:...“Factors such as increased competition, changes in the regulatory environment, the impact of technology, and shifts in customer expectations have created a turbulent business environment in which the ability to adapt to change is critical for success” (Hoopes, 1999, p.90). The modern organisations’ processes of adaptation to change have introduced into the recent work environment some new concepts, which were not well known in the 1960s and 1970s, for example, re-engineering, de-layering, and downsizing are all common features of recent workplace, which have significant impacts on employees’ behaviour and work outcomes. More recently, there has been a substantial shift from the varying degrees of debate over conventional or open plan office layouts with the introduction of the ‘Total Workplace’ or ‘Integrated Workplace Strategy’ concept (Becker and Steele, 1990), which contains a variety of open and enclosed worksettings. The ‘Total

Workplace' concept is a new work environment in which the physical environment is purposely used as a facility to increase organisation effectiveness.

An empirical study was undertaken by Becker and Sims (2001) into nine 'new economy' companies across America. The companies had implemented changes to the design of their workplace with a view to changing their organisation effectiveness. Case study method was used combining survey, observation and interview techniques with over 300 subjects involved. The study involved investigating key components; work effectiveness, communication, interaction and office type, cost and flexibility. It was a longitudinal study spanning two years, to enable the richness and volume of data to be obtained (Becker and Sims, 2001).

Some findings from the study highlighted that the typical high panelled cubicle (partitioned) was almost universally disliked and generally dysfunctional. Contrary to others who would assume that enclosed offices would be preferred (DeMarco and Lister, 1987, Brill, 2001) the findings of this study show that it is some form of team-oriented 'bullpen' or 'pod' that is more preferential. This type of more open, team-oriented scale layout was found to create more opportunities for both communication and concentration, and at more efficient cost because of higher densities, whilst providing more flexibility for organisational change.

The qualitative data gathered via interviews showed that the predicted trade-off between the greater concentration and fewer interruptions in the private closed

office, and the higher levels of communication, but more distractions in the open office, was not commonly considered by staff or reflected in the data. Instead, it was found that by creating an environment in which the workers get to know each other well, and can easily visually learn and observe cues about when interruptions are best timed, the more open environment of the team-oriented bullpen benefits both communication and concentration. The findings also distinguished between preference and effectiveness, highlighting the findings that team-oriented spaces are not the first choice of many workers, especially if they have not been personally experienced in the use of them. However, this finding did not render them ineffective workspaces.

Becker and Sims (2001) further distinguish between preference and effectiveness as they claim from the findings of their study that they are not always synonymous. Their data found that younger workers were more interested in learning from their peers and more experienced colleagues, than older employees. Their study found that locating more experienced staff in closed offices, while increasing their comfort level and allowing them to work more productively and individually, has the potential to significantly slow the development and learning opportunities for the younger workers. It was also found that there was potential to freeze the older workers' development and skills, since they also lost the benefit of being pushed by younger staff to learn new skills and think in new ways about problems they have developed in a fixed way over the years. This study found that there was a relationship between individual learning, productivity and organisation effectiveness

which was influenced by changes to the physical office design (Becker and Sims, 2001).

The study (Becker and Sims, 2001) found that work, even requiring high levels of concentration, was ultimately a social activity and that individuals grounded their own performance in the performance of others. The overall findings of the study highlight the complexity of integrating the components of workplaces due to the diversity of each organisation's characteristics:

“technology, organisational culture, work processes and the physical settings of work must be as rich in diversity as are the people and work being done in them. Our data suggest this might be best done by turning inside out the way we plan offices today. Rather than thinking of the office as a place for solitary activity, from which one occasionally breaks out in time and space to settings intended for social activity, the office is designed primarily as a social setting, from which one occasionally seeks out more private places for contemplation, and secondary functions reversed” (Becker and Sims, 2001, p.52).

This study goes beyond the physical aspects of the office and also takes cognisance of the conceptual aspects of organisations:...“the office as we have known it over the past 50-100 years is an ‘idea’, not an indubitable form, shaped by values, technology, economics and demography”, arguably, viewing the work environment as an intangible concept (idea) rather than a tangible, physical form (Scuri, 1995, Becker and Sims, 2001). It is implied that it is more than the design and physical form of the

workplace being suitably aligned to the organisation system that achieves the desired outcome of increasing organisation effectiveness, but that the involvement and/or perception of the user is also influential (Cairns, 2000).

It is claimed by some that the essential challenge in contemporary settings management is to involve the users in the design (Mowday et al 1982, Forester, 1989). In an empirical study undertaken by Cairns and Beech (1999a), management intentions and commitment were strongly in favour of involving users in workplace redesign and ensuring their input was gained, the reality was that there was a hierarchical involvement with only management making decisions with experts. Users perceived that changes to the workplace were being imposed upon them, which resulted in less satisfaction with the office design. Afterwards, users were then given the ability to re-plan their layouts to something they felt more suitable to their needs. As a result, they created an almost identical layout – only their perceptions of the layout were altered (Cairns and Beech, 1999a, Cairns, 2002). From these findings, it could be argued that part of the perception of space is influenced by the individuals' experience of establishing, creating, moving or 'belonging' to it.

This study highlights that not only are social and physical aspects of the workplace integrated, but they should also be considered as a process, not a singular or isolated event (Cairns and Beech, 2000). Highlighting that intentions and perceptions of change in these spatial elements are often misconceived, and the results can be

misinterpreted, Cairns (2002, p.815) states:..."I would suggest that the answer is that the physical environment has multiple meanings and values for each different set of individuals/groups". Because so much of understanding situations rests with the individual and his/her perception of the activities that take place, the 'reality' often becomes irrelevant in organisations.

In summary, of the studies undertaken, some focus on the relationship between the individual and their environment, but do not consider the effects at the organisation level (Oldham and Rotchford, 1979, Hatch, 1987). They focus on traditional environments of either open or enclosed office types, and are not undertaken in new work environments where a variety of open, enclosed and mixed use spaces are present. Other studies (e.g., Duffy, 1997; Laing et al, 1998; Becker and Sims, 2001) highlight the connections being made between types of organisations, range of individual's work activities – e.g. levels of interaction, communication - and physical design of the workplace, in relation to organisation effectiveness. They recognise the importance of the conceptual understanding of the workplace which includes the perceptions and experience of the process upon those involved. However, they are criticised for their lack of empirical underpinning (Hatch, 1997, Cairns and Grimshaw, 2000).

The role of the physical environment in enhancing productivity and effectiveness of organisations is still at the beginning stages with respect to research. Sundstrom (1986, p.41) argued that:..."the physical environment may have a corresponding

role, perhaps as part of a socio-technical system, which defines the work units of an organisation as well as their relationships. However, this role is only beginning to emerge. Moreover, Sundstrom (1986, p.62) noted that:..."the current status of empirical research on offices leaves much to be desired. It over emphasises laboratory experiments and under emphasises field research. For many issues, evidence is scant". Since then little appears to have changed, and the lack of empirical study of the complexities of the workplace in different organisation contexts over time is highlighted in recent discussion (Hatch, 1997; Grimshaw, 1999; Cairns, 2002).

2.4 Summary of the Literature Reviewed and Conclusions for Future Research

Discussions from both the organisation and management, and the built environment literatures that were bearing upon the same issues - albeit with different views and propositions held - and which are of fundamental significance to this thesis were; the ability of the physical environment to contribute to organisation performance through the changes made within the workplace; and the involvement of users in the process of designing and implementing change in the workplace

Considering the ability of the physical environment to contribute to organisation performance through the changes made within the workplace, there are a broad range

of views. Classical organisation theorists (e.g., Taylor, 1911; Weber, 1946; Fayol, 1949) viewed the physical environment as an integral element of the structure and system of the organisation and within that context it could be used to achieve the optimum in worker output or efficiencies gained. Humanistic organisation theorists (e.g. Mayo, 1945; Maslow, 1954; Herzberg, 1959) viewed the physical environment as a 'hygiene factor' with no ability to contribute positively to organisation effectiveness. Instead, they believed that organisation effectiveness would be derived from paying attention to the social needs of individuals and within that context the physical environment was merely taken for granted unless problematic, in which case it is believed to have the ability to dissatisfy or negatively affect individuals. Systems theorists (e.g., Trist and Bamforth, 1951) viewed the physical environment as one integral component of the organisation system and within that context it was believed to have the ability to influence change. However, there were no empirical studies identified into new work environments, recognising the context specific elements of workplaces in modern, diverse organisations. Instead, a relatively static and generalised view was held (Mayntz, 1964, Burns, 1967). Management and organisation literatures, (e.g., Peters and Waterman, 1982; Handy, 1989; Drucker, 1992) recognise that the physical environment has some ability, within a mix of variables, to contribute positively to organisation effectiveness, and they recognised the complexity and diversity of organisations (Handy, 1989; Drucker, 1992). However, no empirical work has been identified to advance this. Instead the interest is placed upon managing resources, empowerment, participation,

and sharing of knowledge to increase organisation innovation and effectiveness (Kanter, 1989, Senge, 1990).

From the built environment perspectives views held by some (Lee, 1971; Hillier and Hanson, 1994; Dovey, 1999) are that the physical environment is deterministic of behaviour in the workplace and hence, has power to influence change. Others hold a more balanced view (Becker, 1990; Laing, 1993; Becker and Steele, 1995; Duffy, 1997; Cairns and Beech; 1999b; Robertson, 1999; Becker and Sims, 2001) that the physical environment, integrated with social and technological aspects of the workplace, is able to contribute positively to organisation effectiveness – similar to the notion of the systems theorists (e.g., Trist and Bamforth, 1951) but with additional aspects such as mobility, flexibility, symbols and values being considered which are contextually specific to new work environments of organisations.

A review of the literatures has highlighted the range of differing views about the role of the physical environment in organisations. A key challenge for the research conducted within the thesis will be to investigate this relationship of the physical environment with other elements of the organisation, to determine whether it has any ability to contribute to organisation effectiveness. These more holistic and integrated discussions of the work environment in the built environment (Becker, 1980; Becker and Steele, 1995; Worthington, 1997; Laing et al, 1998; Duffy, 2000; Becker and Sims, 2001) literatures constitute the building blocks upon which the research in this thesis will be designed.

The key difficulty inherent in all the research of the effects of the physical environment on organisation performance is that many variables intervene, some of which have more effect on behaviours or performance than any element of the physical design, and that workplaces are inhabited by individuals as well as social groups. Duffy (1974, p.105) states:...

"Effects of the more basic properties of buildings on social interaction and well-being have been more fully studied probably because such properties are easier to measure. We know little of the visual, symbolic, or architectonic properties of office buildings, and even less of the effect of these properties on organisation performance".

Image and identity-related components of physical structure are available to other interpretive readings than those that are intended by designers or managers. It is suggested that management, as leaders, have more symbolic power than they realise, but less control over interpretations than they probably desire (Edwards, 1979; Knights and Roberts, 1982; Soja, 1989). However, if managers attempt to control interpretations (e.g. via rhetoric), they are likely to be interpreted as propagandists and to meet with challenges or indirect resistance. Often the intentions and perceptions of management in change related to spatial elements can be misconceived, and the results misinterpreted by users (Cairns, 2002).

The level of user involvement was identified as an important consideration (Forester, 1989, Cairns, 2002), despite the focus on designing the workplace to match the users needs and taking account of changing organisation structures and workstyles, there is

no substantial evidence of users being fully involved in the process. Instead, the involvement appears to be either hierarchically focused (Laing, 1993; Duffy, 1999; Blyth and Worthington, 2001, Cairns and Beech, 1999a) involving only top management and professional designers, or extending this hierarchical approach to be functionally inclusive (Becker, 1994; Becker and Steele, 1995; Becker, 2000) where emphasis is placed on involving representation of groups of users from organisation divisions. Others (Kanter, 1983; Kotter, 1995; Morris and Raben, 1995; Ribbens, 1996; Nadler, 1998; Kurtzman, 1998) advocate that management should adopt a participative approach and lead by example, working with the users to encourage them to adopt their behaviours and acceptance of the changes. Cairns (2002) proposes that a 'real' involvement across all levels of the organisation is the most appropriate approach, as opposed to one which is either hierarchical or functionally imposed. There is a challenge set by these differing views which is to assess the actual need and functional ability of involving all users in the design and implementation process, and to assess to what extent would this involvement need to be undertaken in order to influence a successful outcome. This will be explored further through the research undertaken in this thesis.

Problems identified from reviewing the literature over the past century has led to conclusion that more recently there have been two main paths in the study of the workplace within organisations. One path within the organisation and management literatures, in recent years, which is more human oriented and focuses on the social elements of the workplace within which the physical environment is recognised as

being important but not empirically studied. The other, within the built environment fields focuses on achieving the optimum design of physical aspects of the workplace to improve organisation effectiveness, but with limited empirical underpinning. Since the middle of the last century, both paths have been separated and taken mainly to the mutual exclusion of each other's interests (Carnevale, 1992; Hatch, 1987; Duffy, 2000).

Becker (1981) claims that organisational theorists are more concerned about work in organisations in their social situation rather than their physical settings. Such a misconception becomes worse when, for analytical or methodological purposes, the physical environment is separated from social behaviour, and job design is separated from social context: "A cake can be described in terms of its separate elements: flour, butter, sugar, eggs; but to know anything about cake, one needs to know how these elements interact, especially under different environmental conditions" (Becker, 1981, p.12). However, I propose that the built environment discussions and their consideration of total or integrated workplace strategies (Becker, 1981; Becker and Steele, 1995; Grimshaw, 1999; Nutt, 1999; Grimshaw and Cairns, 2000; Duffy, 2000) begin to build a bridge between the two paths. There is a recognised need for empirically developed theories to rebuild and strengthen such a bridge, which would reintroduce the joint consideration of the social and physical elements of the workplace within studies undertaken in organisations, bringing new aspects such as mobility, flexibility and individual's values into consideration.

Though there has been discussion in the literature in an attempt to understand the new work environments (e.g. Becker and Steele, 1995; Vischer, 1996; Duffy, 1997; Laing et al, 1998), there is a call from many (e.g. Grimshaw, 1999; Robertson, 1999; Cairns, 2002) to investigate further, as there has been limited empirical research undertaken to date. "The fact that there is relatively little empirical work in any field to draw upon allows for true pioneering research to be done" (Bitner, 1992, p.19). The difficulty in developing these discussions rests with failure to establish a body of research. The continuous development of knowledge by academia and application by practice is a strong platform for empirically developed theories to be built upon (Eisenhardt, 1989), however, it is difficult for researchers to explore, in depth, the substantiated evidence of research in these fields due to limited in-depth access and insight into organisations (Becker, 2000; Duffy, 2000).

Whilst there is discussion in the literature (Duffy, 1997, Worthington, 1997) on the concept of designing the appropriate workplace to balance efficiency and effectiveness gains at an organisation level, and in relation to the performance of the individual, I propose that there are still gaps in understanding how these concepts could be practically implemented in the process of change. I suggest that discussions within the built environment fields (Becker, 1981; 90; Becker and Steele, 1995; Grimshaw, 1999; Nutt, 1999; Duffy, 2000; Becker and Sims, 2001) begin to examine these issues and strive to bring the concepts closer to practice. However, there is still a need for further understanding to render these discussions helpful for practitioners. It is proposed that this thesis will build upon the study of new work environments

that has begun to re-establish a bridge between the study of social and physical aspects of the workplace within organisations. The outcome of such achievement will lead to an increased conceptual understanding of new work environments. In response to the literature findings, the main objective of the research undertaken in this thesis will focus on contributing to an increased understanding of new work environments.

In order to guide the enquiry, two research objectives have been created which were informed by the literature reviewed;

- 1) To contribute to increased understanding of the role of the physical design elements in a new work environment.
- 2) To identify the key elements and their relationships within new work environments.

Given the complexity of environment/behaviour relationships a variety of methods will be appropriate. As the study of the physical environment has an extensive volume of humanly interpreted, cultural, emotional and value laden references within organisations (Pfeffer, 1981; Rapoport, 1982; Carnevale, 1992), the research design for this inquiry should allow a deep understanding of how people make sense of their environment and the experiences gained within it, allowing for a variety of interpretations and explanations to be understood. The relevant research discussed in

the literature reviewed (Becker et al, 1994; Duffy, 1997; Becker and Sims, 2001), in the main, suggested the use of a case study approach that enabled access to the subjects for observation, over a lengthy period of time, capturing data on multiple elements of the workplace as a process and not a singular or isolated event (Cairns and Beech, 2000). Direct observation of environment and employees was deemed appropriate as such observations could be extremely detailed and useful for comparing environments, for example. For theory development, direct observation could be the source of additional propositions (Bitner, 1992, p.19).

Given the scarcity of research reported there is a tremendous opportunity for theory building and empirical testing (Bitner, 1992; Carnevale and Rios, 1995; Grimshaw, 1999). Chapter three to follow will discuss the design of the research chosen to be most appropriate to undertake the study of new work environments within Scottish Enterprise.

Chapter 3

METHODOLOGY

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 - 3.6.1 The Data Analysis**
 - 3.6.2 Building Theory from The Case**
- 3.7 Conclusion on the Realism Paradigm and Methodological Discussion**

3.1 Introduction and Research Objectives

The main objective of this thesis is to contribute to increased understanding of new workplace environments, through empirical study of pilot projects implemented in Scottish Enterprise. Two specific research aims were identified. First, the aim was to study the contribution of the physical environment within the overall context of new work environments, linked to changes in management structure, technologies, and working practices. Second, there was an aim to identify key elements of the social, technological, organisational and physical environments and their relationships to each other over time. In addition, there was a desire to bring the academic theory closer to the current practice, to inform both and to contribute overall to knowledge on the workplace. This arose from the arguments presented in the literature review, proposing that much of what is held forth as theory about new, flexible work environments is limited in terms of both academic exploration and of research rigour.

This chapter explains the activities that formed the research project and the reasons for choosing to conduct the study in this way. The justification for the selection of the realism paradigm as the research philosophy – section 3.2 - is followed by an explanation of the case study research methodology used - section 3.3. This in turn is followed by section 3.4, which describes the research methods used and the researcher's role. Section 3.5 outlines data collection and research design. Section

3.6 discusses the data analysis and management, and is followed by a summary discussion in section 3.7.

3.2 Research Philosophy

The research paradigm is the overall conceptual framework within which the researcher operates: the “...basic belief system, or world-view that guides the investigator” (Guba and Lincoln, 1994, p.105). In relation to selection of the most appropriate research paradigm for conducting this research, many factors were considered. These included not only the nature of the subject to be studied, which is subject to both quantitative and qualitative assessment, the nature of the methods available for data collection, but also my own role, as both subject of the research process, as researcher, and as a member of the organisation and its management team. The choices of research paradigm, and the factors for consideration in selecting, are outlined in Table 3.1. The lack of established theories in this area of inquiry meant that a wholly deductive research design would have been inappropriate. What was most important was that the research approach allowed an exploratory and explanation building process to occur. In response to this research requirement, a design normally associated with a positivistic approach was rejected.

Table 3.1 Basic belief systems of alternative inquiry paradigms

Item	Paradigms			
	Positivism	Realism	Critical theory	Constructivism
Ontology	<i>Naïve realism:</i> reality is real and apprehensible	<i>Critical realism:</i> reality is “real” but only imperfectly and probabilistically apprehensible and so triangulation from many sources is required to try to know it	<i>Historical realism:</i> “virtual reality” shaped by social, economic, ethnic, political, cultural, and gender values, crystallised over time	<i>Critical relativism:</i> multiple local and specific “constructed” realities
Epistemology	<i>Objectivist:</i> findings true	<i>Modified objectivist:</i> findings probably true	<i>Subjectivist:</i> value mediated findings	<i>Subjectivist:</i> created findings
Methodology	<i>Experiments / surveys:</i> Verification of hypotheses: chiefly quantitative methods	<i>Case studies / convergent interviewing:</i> triangulations, interpretation of research issues by qualitative and quantitative methods such as structural equation modelling	<i>Dialogic / dialectical:</i> researcher is a “transformative intellectual” who changes the social world within which participants live	<i>Hermeneutical / dialectical:</i> researcher is a “passionate participant” within the world being investigated
<p>Note: Essentially, ontology is ‘reality’, epistemology is the relationship between that reality and the researcher; and methodology is the technique used by the researcher to discover that reality.</p>				

Source: Perry, Alizadeh and Reige, (1996, p.547) based on Guba and Lincoln (1994).

Much of the discussion on the nature of the workplace environment, discussed in the literature review was lacking empirical underpinning (Robertson, 1999; Grimshaw, 1999; Cairns, 2002) and was often undertaken in ‘conventional’ – before the advent of information and communication technologies (ICT) - workplaces (e.g. Oldham and Brass, 1979; Oldham and Rotchford, 1983). Therefore, an important part of the design of this research was that it would be supported by an empirical inquiry conducted within the context of a ‘new (ICT-supported) work environment’, with key strategic characteristics of changing the physical design of the workplace in an attempt to improve organisation performance.

Positivism detaches the researcher from the context of study, as in the classical organisation theory research, while within the other three paradigms displayed in Table 3.1, the researcher participates in the real world. This participation in research allows the researcher to understand and describe, to revise meanings, structures and issues from experiences and the perceived views of others (Orlikowski and Baradaui, 1991). As this research focuses on the understanding of new work environments within organisations, which is a social sciences study, involving the opinions of people and real life experiences, positivism can be considered inappropriate (Perry et al, 1998).

In engaging with the experiences of people within the workplace, critical theory might be considered as an appropriate methodology, being applicable to research inquiries that are often long-term ethnographic studies (Guba and Lincoln, 1994). Within critical theory, assumptions in this paradigm are subjective and their knowledge is grounded in social and historical routines and are therefore not value free, but value dependant (Perry et al, 1998). However, in general, critical theory relates to the critique and transformation of social, political, cultural, economic, ethnic and gender values over an extended period of time. This research design was not considered appropriate because this study does not have a long term intention to liberate people from their historical and social structures (Perry et al, 1998, Lincoln and Guba, 2000).

Considering the social constructivism paradigm. Social constructivists have a critical relativist ontology and perceive truth as a construction related to a particular type of belief systems held in a particular context (Perry et al, 1998). They have a subjectivist epistemology (researcher and respondent co-create understanding) (Perry et al, 1998, Denzin and Lincoln, 2000). The knowledge created from the research is created through and with the interaction between the researcher and the informant. They tend towards a refusal to adopt any permanent unvarying standards by which truth can be known (Lincoln and Guba, 2000). The methodological procedures are usually naturalistic. The constructivist paradigm is considered by some (e.g., Hunt, 1991, Perry et al, 1998) to be unsuitable for research in the business field, since it excludes consideration of quantitative or objective economic or technological dimensions. Realism research can lead to research findings that are needed and are of practical use (Silverman, 2000). This was an important element for consideration in this research as it was an aim to bring closer the academic research to practitioners within organisations.

The three paradigms of positivism, critical theory and social constructivism as discussed above were not considered appropriate for this research. In that context, the realism paradigm will be discussed in the next section.

Research about business has been criticised for not capturing 'real-world' complexity (Pettigrew, 1987; Gable, 1994; Easterby-Smith et al, 1997). Borch and Arthur (1995) suggest that a mix of objectivist and subjectivist methodologies can help

address such criticisms. The objectivist approach is predicated on explaining phenomena, while the subjectivist approach emphasises describing and understanding phenomena. Borch and Arthur (1995) claim that both approaches should be used, arguing that a mixed methodology would contribute to the richness of the new strategic management models. Their bilateral approach to research is becoming more prevalent (Easterby-Smith et al, 1997). In brief, their methodology aims to blend the rigour of the scientific validity of objectivist research with the contextual elements and insights of subjectivist research (Borch and Arthur, 1995).

Building on these ideas, Perry et al (1998) suggest that the blending of the two approaches could be supplanted by a single approach, that being the third approach of realism. The central principle of realism is its conception of reality: "The realist approach has a high degree of plausibility to social scientists who theorise the world in terms of the impact of (objective) social structures upon (subjective) dispositions" (Silverman, 2000, p.124). The realism paradigm separates the objective, positivist dimension and the subjective, interpretive dimension.

Realists believe that there is a real world to discover, even if it is only imperfectly and probabilistically apprehensible (Merriam, 1988; Tsoukas, 1989; Guba and Lincoln, 1994; Godfrey and Hill, 1995). Challenging this belief, Feyerabend (1987) attacks the notion of a singular, knowable reality, and presents evidence of a multiplicity of realities within our single world. Beech and Cairns (2000) support this argument in their discussions of change, and through exploration of four

'perceived' realities within organisations. However, in a subsequent discussion, Cairns (2002) demonstrates how what might be perceived as a single, unitary physical reality within organisations can be interpreted by the individuals involved in a variety of ways. This is consistent with the realism paradigm, in which it is argued that there is only one reality but multiplicity rests in the perceptions of that reality. In other words, perception is not reality, as constructivists and critical theorists suggest; conversely a perception, for realists, is a window from which a picture of reality can be triangulated with other perceptions. That is, realists acknowledge the difference between the world and particular perceptions of it, and the pre-eminent importance of that world. To sum up, constructivists and critical theorists consider there are many realities, while realists consider there is only one reality; although several perceptions of that reality must be triangulated to obtain a better picture of it (Perry et al, 1998).

A critical aspect of realism research is that the research should discover what causal powers are in operation. This is not the causality between discrete events but a more general view of the mechanisms resulting in causality (Easton, 1998). Realists believe that there is contingency, that causal powers depend upon certain conditions to exist (Easton, 1998). As was suggested by Perry et al (1998) this research focused on the discovery, identification, description and analysis of the structure and generative mechanism related to a complex and imperfectly apprehensible reality. This relates to the search for explanation:..."Thus valid explanatory knowledge in this realist epistemology requires the researcher to identify the contingent causal

powers that are operating in the particular situation under research and the ways in which they combine and interact in order to create the particular events observed in the empirical domain" (Easton, 1998, p.377).

Within the realism paradigm a mix of methodologies are used. In this thesis, qualitative research is the dominant form; therefore it is useful to continue this discussion within that context. Qualitative research can be embedded in the assumption that features of the social environment are constructed as interpretations by individuals and that these interpretations tend to be transitory and situational. According to Denzin and Lincoln (1994), qualitative research is multi-method in its focus and involves 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 interpret, phenomena in terms of the meanings people bring to them. Merriam (1998) characterises qualitative research as an umbrella concept covering several forms of inquiry that help to explain the meaning of social phenomena; and where the focus of the study is interpretation and meaning.

Realism research must be conducted primarily through a process of inductive theory building, rather than the testing of the applicability of a theory to a population, which is the primary concern of positivism (Healy and Perry, 2000). This was important in the choice of approach, as a limited number of theories, and these are often contradictory in nature, were already established. The realism paradigm was chosen as the overarching research philosophy used to guide this inquiry, as it enhanced the

discovering of multiple perceptions of the reality of the phenomenon under study, while simultaneously providing sound justification for the use of mixed methods. Multiple perceptions of the actuality of the physical environment are gained and verified through the use of both qualitative and quantitative methods. As discussed previously, the lack of established theories in this area of inquiry meant that a wholly deductive research design would have been inappropriate. The realism paradigm was selected as a conceptual framework that could accommodate the methodology. Selecting this paradigm ensured an exploratory and explanation building process could occur.

Realism is neither value-laden nor value free, rather realism researchers are value aware. Mediation of reality is required, influenced by relationships and context, by my presence as fellow subject, as manager and, less explicitly, as researcher. Yet scientific vigilance requires that researchers make full use of their subjectivity, while, at the same time, fully exercising their will for objectivity, which takes the form of permanent self-analysis. According to Bourdieu (1993) this dual utilisation, or dialogue, of subjectivity and objectivity is both complementary and conflicting. The challenges inherent in the role of the researcher within this chosen research inquiry will be discussed fully in section 3.4.2 of this chapter. As this research is centred within the realism perspective the beliefs, values and interests of the researcher are present. Therefore the research will be value laden and the personal views of the researcher will be included, though empirically supported where possible.

3.3 Research Methodology

3.3.1 Case Study Methodology

Case study research evolved as a distinctive approach to scientific inquiry, partly as a reaction to perceived limitations of quantitative research (Gall et al, 1996). It is one of several approaches to qualitative inquiry. There was a view that case studies were only an exploratory tool and could not be used to describe or test propositions (Platt, 1992a cited in Yin, 1994). However, there is both an imprecise understanding of the case study, and the absence of a universally accepted definition of it as a research typology. Case study is often misused as a catch-all research category for anything that is not a survey or experiment and is not statistical in nature (Merriam, 1998). The lack of a precise and universal definition is compounded by the flexible and adaptive nature of the typology: a case study can accommodate a range of research design and data collection techniques, epistemological orientations, and disciplinary perspectives.

The case study is defined as a methodology in the literature in a variety of ways: the process of actually carrying out the investigation, the unit of analysis (the case), or the end product, and sometimes a combination of all three.

Yin (1994, p.13) defines case study in terms of the research process 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". In keeping with this holistic approach, Gomm et al (2000), believe that the best use of the case study is for adding to existing experience and humanistic understanding. Others focus on definition of the unit of study, an entity around which there are boundaries that delimit what will be studied from what will not. Stake (1994, 1995) calls the case an integrated system; Smith (1978) uses the term bounded system, and Miles and Huberman (1994) refer to the case as a phenomenon of some sort occurring in a bounded context.

Wolcott (1992) describes case study as an end-product of field-oriented research and discusses the focus on definition of the product of the investigation. Merriam (1988) originally viewed it as an intensive, holistic description and analysis of a single instance, phenomenon, or social unit. However, Merriam's (1998) current orientation is that the single most defining characteristic is the delimitation of the unit of study. There is consensus amongst most that if the phenomenon is not intrinsically bounded, it is not a case. A technique for assessing boundedness is to ask if there is a limit to the number of people who could be interviewed or to the observations which could be made. If there is no actual nor theoretical limit, the phenomenon is not bounded enough to be a case. The discussion to follow in Section 3.4.1 will demonstrate the boundedness of the case in this thesis.

Perry et al (1998) argue that within the realism paradigm, case study research methodology appears to be especially appropriate for strategic issues. This was a

key characteristic in the selection of the methodology as a conceptual or holistic understanding of new work environments would be sought. They, amongst others, emphasise a preference for the analytical method of case study, and not merely the descriptive use of case studies, which has been subject to much criticism in the past due to a lack of rigour (Yin, 1994; Perry and Coote, 1994; Adams and White, 1994; Perry, 1998). In this thesis, the case study methodology is used to provide strategic insight, obtained through its mixed methods, thereby providing breadth and depth of inquiry. It is analytical in its form of investigation, using within case and cross case analysis (Eisenhardt, 1989, Yin, 1994) as discussed in section 3.6 of this chapter.

Perry et al (1998) give three major reasons for using the qualitative research methodology of case studies. Firstly, qualitative methods address theory construction and theory building, rather than theory testing and theory verification (Lincoln and Guba, 1985; Bonoma, 1985; Merriam, 1998; Tsoukas, 1989). In the early stages of theory development, where phenomena are not well comprehended and the relations between phenomena are not known, quantitative research methods can lead to inconclusive findings (Parkhe, 1993). In contrast, theory is built in case study, and related qualitative research, by making comparisons and looking for similarities and differences within the collected data. That is, elements of the theory are being confirmed or disconfirmed, rather than being tested for generalisability to a population. Furthermore, a qualitative or exploratory method makes the research effort more flexible and allows data and theory to interact, at least in the early stages of the research project (Neuman, 1994, Eisenhardt, 1989).

The second argument in favour of case studies is the need to delve deep to gain an understanding of the phenomenon. The primary objective of case study and related qualitative research is to understand the phenomena under research, and to interpret the respondents' experiences and beliefs in their own terms (Gilmore and Carson, 1996, Perry et al, 1998). Merriam (1998) states that qualitative research exhibits an interest in understanding how people make sense of their world and the experiences they have in that world. It strives for a depth of understanding as an end in itself, not as an attempt to predict what may happen in the future (Patton, 1985), nor to generalise to universal situations. It shows a direct concern with experience as it is lived or felt (Sherman and Webb, 1988).

The final supporting argument for case study research methodology is related to the former two, and concerns the required classification into categories and the identification of inter-relationships between those categories. As theory building in this area becomes the focus of interest, so too does the role of describing, classifying and comparing the complexity of several organisational operations and managerial experiences (Bonoma, 1985, Gilmore and Carson, 1996). The goal of more rigorous analytical case study research can be to isolate and define categories as precisely as possible and then to determine the relationships between them (McCracken, 1988). For this reason, details uncovered in a case can delve into the complexities and practices of people and organisations that other forms of investigation would not.

In summing up and responding to the three areas of reasoning discussed by Perry et al (1998) for using case study research, this thesis will demonstrate that theory building through within case and cross case comparisons, and through seeking similarities and differences, was an extensive part of the data analysis. The intention was not to generalise, rather to specialise within the context of the situation. The focus in this thesis is on understanding the experiences within the host organisation that occurred within the time-bound period of the research inquiry. There is no attempt to predict any future changes as a result of the knowledge and/or insight gained.

The depth and detail of qualitative data could be obtained only by getting physically and psychologically closer to the phenomena. As said, the closer one can get to the phenomena, the better it will be understood, and previously unknown relationships can emerge from case studies that may lead to a rethink of the phenomena (Stake, 1981; Merriam, 1988; Carson and Coviello, 1996).

It is also shown in this thesis that interaction between data and theory took place and informed the research design. As a result of the data analysis, key categories of new work environments and their relationships are identified, and through that process of within case and cross case comparison (Eisenhardt, 1989; Yin, 1994), the rigour of the analytical nature of the case study methodology used was validated.

3.4 Research Methods

3.4.1 The Case Study

New work environments are increasing in popularity within organisations, however the opportunity to gain ‘deep’ and longitudinal access to data is rare. This is the main reason for adopting the single case study approach which, according to Yin (1994), is eminently justifiable for revelatory purposes. That is, when a situation occurs that few social scientists have previously had the opportunity, deep within an organisation, to investigate, although the problems or situations pertain generally. There are other research investigations with similar types of inquiries, but none display the opportunity for the researcher to be based within the context of the study over time, with full access to a wide array of data. Pettigrew (1990) suggests that it makes sense to choose cases in which the process of interest is transparently observable.

The case setting for this study is a Scottish based public sector economic development organisation: Scottish Enterprise. The remit of Scottish Enterprise is to increase economic performance in Scotland. The focus of the case study is a project within the host organisation, Scottish Enterprise, called the Workplace of the Future (WotF). The WotF project is a redesigned office workspace that accommodates approximately 70 staff (varies over the time of the research due to staff turnover and organisation change). The purpose of redesigning the workspace

was a deliberate attempt by Scottish Enterprise to understand the effects of the physical environment upon individual productivity and organisation performance. More specifically, the espoused WotF objectives, as set out in the original funding request paper (Scottish Enterprise, 1996), were:

- 1) to exploit the business benefits (increasing productivity and organisation performance) enabled by technology changes, new ways of working and innovative workplace design;
- 2) to develop a positive, productive and creative workplace culture; and,
- 3) to develop and share associated best practice with Scottish businesses.

These objectives were very ambitious and, I would suggest, purposely worded to make a business case to secure funding and obtain internal organisation buy in to the project to proceed. The project objectives could be criticised for their inherent confidence, and/or arrogance, whether or not these were achievable and correct from the outset.

Yin (1994) states that the 'unit of analysis' should be identified as a vital step in the process of case study research. This defines the case and thereby determines the limits of the data collection and analysis. The WotF is the main setting for this research and hence, the unit of analysis. The WotF project has time-bound

limitations. The project began in December 1996 and formally ended in December 2000. This was the four year period in which data was collected. The 70 residents of the WotF who could be observed or interviewed throughout the period of research bound the case at any one time.

There were two sub-units of analysis used to provide additional supporting data and inform the research investigation (Yin, 1994). These two projects emerged as a result of the main case, WotF. As the WotF project was progressing, 'successfully' in the organisation's opinion, there was an interest to extend the development of new work environments further and spread them into other parts of the organisation. The two sub-units are named FutureSpace and Skillspace. Both projects were initiated at different times, FutureSpace in 1998 and Skillspace in 1999. Hence, the volume of data available on each of the sub-units differs.

In summing up, the three projects incorporated in the study were all within the host organisation, Scottish Enterprise, and each of them were chosen for the reasons set out below:

- they were congruent with the characteristics of new work environments discussed in the literature review;
- they were physically redesigned workspaces attempting to positively influence staff productivity and contribute to organisation performance;

- they incorporated deliberate attempts to reduce visible hierarchy and status symbols in the workplace;
- access to data and research subjects was open and available to myself; and,
- all three projects were able to be observed longitudinally, albeit to varying degrees.

The process of carrying out the research involved an empirical inquiry investigating the phenomenon within its real life context; there were boundaries which set the limitations on data to be gathered; and, the end product of the inquiry was a descriptive account of the field research.

Presentation of the main case and the two sub-units of analysis are set out in chapter four.

3.4.2 The Researcher's Role

The embedded role of a researcher within an organisation, whilst valuable for obtaining deep insight, can pose many challenges (Merriam, 1998, Gomm et al, 2000), such as dealing with the researcher's bias and how the researcher is perceived and/or accepted by the subjects under study. As identified by Strati (2000, p.142): "Immersing oneself in organisational life raises the problems of how to detach oneself from it". These challenges can increase when the individual is holding

multiple roles within the case in addition to that of 'detached' researcher. My multiple roles within the case; including those of researcher, member of the group under study, and manager of the project; were recognised for their potential to present conflicts and problems. I was embedded within an overall organisation setting that could be viewed as an entity with its own agenda. The organisation agenda could be interpreted as one that sought to discover what the positive elements of workplace change in new work environments were. This was driven by the desire to cherry pick those successes for future organisation planning and simultaneously to share the successes with the wider Scottish business community - in an attempt to depict an image of SE at the forefront of workplace changes.

Multiple Roles of the Researcher

Throughout the PhD investigation, there was a degree of internal conflict between myself as detached researcher, project manager of WotF, and as an individual subject to the change. As project manager there was a desire to establish the project as a success. This role held the responsibility of investigating new workplaces on behalf of SE and with a responsibility to share the findings with Scottish Businesses. Both SE and other businesses were investing substantial monies into redesigning workplaces for the future and were therefore, interested in capturing the benefits of such investments. There was no immediate pressure or targets set for me in this role to justify the SE spend, however, there was a personal awareness that as SE is a public sector organisation, care should be taken not to be seen to be squandering money on a project that would bear no returns. To that end, when in discussion with external businesses there was a tendency to focus on the positive elements of the project.

Businesses predominantly asked about the productivity gains and whether or not they were achievable through a physical workplace redesign. Part of the culture within SE encouraged staff to be inspiring with others to help them adopt business development solutions. It was, arguably, difficult in my role as project manager to detach myself from this element of the culture when dealing with businesses regarding the projects and, part of the cultural effect included an element of my

pride in the role with the desire for a personal association with something that was deemed successful.

As an organisation investigator and detached researcher, I was conscious of my enthusiasm for the project and therefore, the potential inherent bias. There was a challenge to manage the dissemination of information to ensure a balanced view was offered. From the researcher's perspective there was a desire to discover both the positive and the negative findings from the case study and to seek out not only what was happening throughout the changes taking place in the case study but also to understand why certain circumstances were occurring. This understanding of why was addressed through multiple data gathering techniques, with myself and others engaging with the research subjects over time, and through my own critical reflection on data in relation to the different literature sets identified in chapter two.

As an individual subject to the changes, I had found the experience very liberating, valuing the opportunity to make my decision of choices in workplaces and worksettings to suit my tasks and balance my work-life schedule. I experienced very few negative factors throughout the change process. Whilst it could be possible that I held an inherent bias towards the positive aspects and successful outcomes of the project, this first hand experience of the changes that I went through as a user of the workplace, strengthened my understanding of the process involved.

It was challenging to hold the multiple roles and remain the detached researcher throughout the duration of this PhD. As discussed above, I may have been more receptive to the positive effects of the change to new work environments and simultaneously this may have led me to exclude recognition of contrary data. The externalising of these multiple roles, use of different data collection methods and the use of 3rd party investigators, provided a robust framework for going some way towards dealing with this potential bias.

Researcher as Participant Observer

Merriam (1998) says the human researcher is characterised by responsiveness to context and sensitivity to non-verbals; by the ability to consider the total context, to adapt techniques to the circumstances, to process data immediately, to clarify and summarise as the study evolves; and to explore anomalous responses. As realism researchers are neither value laden nor value free, rather, they are value aware, a participant's perception for realism is a window to reality through which a picture of reality can be triangulated with other perceptions (Healy and Perry, 2000). That is realism relies on multiple perceptions about a single reality, these multiple perceptions involve triangulation of several data sources, and of several peer researcher's interpretations of those triangulations. My parallel roles as project manager and as one of the original 'guinea pigs' who moved into the WotF, allowed observations and interventions to be undertaken on an ongoing basis. It also

allowed for exposure to a vast amount of circumstances as data to consider, through both the eyes of a researcher and a subject simultaneously.

I relate most closely to the role of the key decision maker in an organisation setting as discussed in the case study literature (Yin, 1994). The benefits of this role are the ability to gain access to events and groups, and the ability to perceive reality from the viewpoint of someone 'inside' the case study. Other opportunities arise because one has the ability to adapt minor events, such as calling a meeting of people in the case study, to the research purposes. Only through participant observation can such manipulation occur. The manipulations will not be as precise as those in laboratory testing experiments, but they can produce a greater variety of situations for the purposes of data collection (Yin, 1994). As both the researcher and project manager, manipulation of situations within the case was possible. For instance, I set out and influenced the protocol for data collected via the evaluation studies. Yin (1994) professes that the use of a case study protocol is paramount to the case study method of preparing for and gathering data. The protocol in the research conducted within SE was intended to be a guide to the investigators (third party consultancy organisation) carrying out the study. This required working closely with the consultancy organisation, and internal staff engaged in the study, to ensure that the procedures to be followed were clearly understood by all and, as a result, increase the reliability of the research.

Minor interventions, such as the commissioning of an evaluation of the effects of new teams settling in to WotF, were conducted in an attempt to collect more data and to explore ideas that were developing. Another intervention was the initiation of data collection via email issued to all staff. I was interested to learn more about the study group's feelings towards the new work environment and, more specifically, to question the details of what was working, or not. Both of these examples are discussed in more detail in section 3.5 of this chapter.

Most of the data gathered and analysed in this thesis was directly gathered from the participants, and my role of researcher as a participant observer added great advantage in gaining the emic perspective. Meaning, Merriam (1998) suggests, is mediated through the investigator's own perceptions. The emphasis on understanding the emic perspective is not incompatible with inclusion of the etic, or outsider's, perspective. The perspective of the researcher helps him or her to make conceptual and theoretical sense of the phenomenon in terms of his or her own professional experience. The transcripts that I analysed as data in a historical way were written by a third party consultancy organisation; this upheld the etic perspective; and offered a balance of emic and etic perspectives for my consideration. More problematic is the consideration that the transcripts, as archival documents, were "collected, processed and expounded according to the organisations criteria...these criteria do not necessarily correspond to those of the organisational research" (Strati, 2000, p.159). This challenge was, to a certain extent, counterbalanced by the use of a protocol framework (Yin, 1984) which pre-

determined the data gathering process used in establishing these documents from the outset.

I encountered situations where staff would approach me as project manager of the WotF to highlight potential areas of investigation, or to raise concerns that they felt were worthy of exploration. Where relevant, I would discuss this with the third party consultants for them to consider in their evaluation studies. There were also situations where staff would attempt to use me as the mediator between sponsoring management or leaders within the workspaces to convey messages in the hope of raising awareness of particular issues. Arnaud (2002), states that it is not unusual for a participant observer to be mistaken for something other than a simple researcher. He or she might, for example, be considered as a veritable saviour capable of rescuing a company undergoing serious problems, as the management's consultant-alibi, as a spy on behalf of such or such an actor, or even as an attentive ear whose aim is to listen and pass onto 'the powers that be' a certain number of claims (Arnaud, 2002). I tried to overcome this in my update discussions with sponsoring management where I attempted to restrict my reporting of progress to remain within the boundary of the formal, protocol agreed, evaluation studies (A1.1-A1.6) to avoid becoming a mediator of concerns between users and their managers.

Gillham (2002) suggests that you don't deal with the observer effect by denying it - you look out for probable influence of your presence. He says researchers as

research instrument makes some contribution, you have to make a consistent effort to observe yourself and the effects of your contribution. He states that a conscious attempt at rigour can usually lead to a reasonable judgement: we can expect no more. When discussing the conflicts of observation or fieldwork, Angrosino and Mays de Perez (2000) say that most social scientists have long recognised the possibility of the observer's affecting what he or she observes. Participant observers who have deliberately set out to achieve a degree of subjective immersion in the phenomenon they study (Cole, 1983, Wolcott, 1995) still claim to be able to maintain their scientific objectivity. True objectivity has been held to be the result of agreement between participants and observers as to what is really going on a given situation.

Validation of Researcher's Observations through Data

A positive aspect of holding multiple identities was the ease of access to continually review the data and not just to be the research instrument in the gathering of that data. Hence this provided a comprehensive strategic view of the case. Guidelines in the literature (Yin, 1984; Stake, 1995; Gomm et al, 2000) on the enhancement of retrospective data accuracy were followed by increasing the range of perspectives through development and divergence in the process of data collection. When participants within the case had reviewed all the evidence, and after an initial case study transcript was documented by the consultants, the reports were also reviewed by the major informants in the organisation. Once agreed upon as an accurate reflection of reality, the reports were available to all staff in the organisation via the

company intranet site. Such a review was not only a minimal procedure for validating the data collection process, but was also a courtesy to those who had co-operated with the research.

Stake (1995) acknowledges the researcher's role as interpreter and gatherer of interpretations, believing that what researchers know is constructed from experience gained in the case, not by discovering it 'whirling' there, untouched by experience. He argues that what they know of reality is only what they have come to believe from their own experience, not what they have verified outside their experience. In this inquiry, both my roles of researcher, as participant observer and subject of the case, expanded the opportunities for experiences to be gained. It is noted that often the experience gained by the researcher undertaking participant observation is different from the data captured from it (Linstead, 1994, Strati, 2000) and that to avoid inclusion of such sensory and cognitive aspects would lead to poor illustration of findings. Consideration of the potential effects of my bias as researcher will be discussed in the context of the interpretation of findings in chapter five.

Acceptance and/or Perception of Researcher

Arnaud (2002) suggests that contextualised behaviour by an observee may be based on a more or less 'realistic' perception of the observer as a person. Thus, a management researcher working within an organisation may genuinely be accepted

for and seen as what he or she is namely, a disinterested scientist whose inclusion in the company's internal relationships is not determined by power considerations. This does not mean, however that the observees will put their cards on the table, even if they trust the researcher.

The establishment of trust is key to being granted a view to the deeper aspects of the subjects values and beliefs. Stake (1995) points out that perhaps the most important choice the researcher will make is how much to be oneself. Much of the time the researcher will have no apparent choice, the circumstances require it, or the researcher does not know how to act otherwise. Often the researcher will be pressured to be more the evaluator, the scientist, or the therapist than he or she wants to be. Others will help negotiate the role. The role should be an ethical choice, an honest choice.

It is widely recognised that gaining access and building trust are both problematic and time consuming (Stake, 1995; Hammond, 1996; Behar, 1996; Angrosino, 2002; Arnaud, 2002). However, it is proposed in this PhD, that the embedded residence of the researcher during the longitudinal duration counterbalanced these problems.

There were however, limitations to this acceptance. Within the FutureSpace and Skillspace projects access and trust was far less established than it was in the main case, WotF. This was due mainly to the fact that I was not a co-habitant there, and hence, staff were not as familiar with my presence. On reviewing historical data such as the evaluation study write ups (transcripts), which were conducted by 3rd

party consultants, acceptance and trust would have been less critical to me as the researcher as the consultants were the research instruments. The consultants established themselves as independent evaluators. My perception and experiences formed from my periodical visits to the other two projects would have undoubtedly influenced how I interpreted the etic view of the consultants through analysis of their transcripts.

In summary, my role within this case study undoubtedly brought resulting subjectivity and this was acknowledged from the outset. It brought an opportunity to interact with the data and theory. As a participant observer, I was able to gather data throughout the life of the case study and to verify data or theories that were emerging. These trades between the opportunities and the problems associated with being the researcher within a case study have been considered seriously. Gomm et al (2000) highlight the possibility of observer bias in the observation of a case (only seeing what one wishes to see), hence of misleading, if not literally fortuitous, measure. This aspect of bias will be discussed in the context of the interpretation of findings, chapter five. Gomm et al (2000) argue that simple remedies are available however, such as, acknowledgement of bias and use of multiple data sources to corroborate findings.

My multiple roles, as participant-actor and as research instrument, could have led to major problems of bias statements and interpretations (Becker, 1958; Yin, 1984;

Gomm et al, 2000; Gillham, 2002). However, the use of consultants as mediators providing an etic view, triangulation (Denzin, 1978; Eden and Huxam, 1993; Flick, 1998; Healy and Perry, 2000) of perceptions via data sources, and validation with observees, all brought to bear on the case study assisted with counteracting the potential validity problems.

3.5 Data Collection and Research Design

Research paradigms influence the methods used in the collection and analysis of data (Churchill, 1991). Deductive and inductive logic assist in scientific inquiry, and both guide the understanding of the problem to be studied (Babbie, 1989, Easterby-Smith et al, 1997). Through the use of the realism paradigm approach, which embraced the inductive and deductive methods, this thesis was a richer study into understanding new work environments.

In the realism paradigm it is held that there is an external reality (Tsoukas, 1989). It is the complexity of that reality, and the limitations of the researcher's mental and/or perceptual capacity that makes triangulation of data essential to refine fallible observations of reality. Case study data collection is typically multi-method, usually involving interviewing, observing, and analysing documents. Multiple sources of information are sought and used because no single source of information can be trusted to provide a comprehensive perspective. By using a

combination of observations; interviewing; and document analysis, the fieldworker is able to use different data sources to triangulate and cross-check findings in order to increase validity (Patton, 1990).

Triangulation (Denzin, 1978; Eden and Huxam, 1993; Flick, 1998) is a way of maximising the analysis of the data collected and comparing quantitative with qualitative data on the case study under research to seek similarities and differences. In this study, triangulation is used, and analysis of documentation is cross-checked with analysis of the questionnaire findings. Further cross-checking is undertaken using the observations made within the case study. This furthers the aim of addressing the issues of construct validity because the multiple sources of evidence essentially provide multiple measures of the same phenomenon (Bateman and Moore, 1983, Yin, 1994).

Data were gathered in two ways, several by myself as the researcher directly from the subjects, and several by the 3rd party consultancy organisation. Regardless of whether I directly collected the data from the research subjects, or whether it was gathered by the 3rd party consultancy organisation under the agreed protocol framework, for the purposes of analysis, all data sources were treated as historical data and reviewed accordingly. The exception to this was my on-going observations in the case, which were used throughout the study to inform the design of the investigation and to compare evidence with the review of historical data.

The analysis of data collection techniques was secondary to the primary focus, which was the review of historical data sources; that is, more specifically, analysis of how data was gathered had less emphasis than the actual review of that data in an historical manner. The discussion to follow will incorporate an explanation of the research design and a demonstration of how theory derived from the literature also informed the design process. The purpose is to highlight both the solid basis from which the review of historical data was mounted, and how the insights from inductive and deductive theories were developed. It is important to detail the process used, so that it is clear how the historical transcripts that are used for data analysis materialised.

As part of the protocol, a study framework was designed in late 1996 that facilitated the collection of data to explore the degree to which the WotF project had changed working practices and business efficiency within the host organisation. It also captured information to increase the understanding of the effects of the changing working practices upon staff in general, together with any wider implications for the organisation, and for other Scottish businesses. The intention was to establish a benchmark for the WotF project, against which future evaluations could be compared. The study framework design was developed by Scottish Enterprise. I was involved as a member of the Study Steering Group working with two external 3rd party consultancy firms (Coopers & Lybrand and Hawthorn). The framework design ensured that the benchmark and evaluation studies (see Appendix A and data sources A1.1-A1.6) would involve a combination of methods to gather data

including: one to one interviews, focus group interviews, questionnaires, individual project records, and workplace observations.

My role in this data collection exercise primarily consisted of constructing and agreeing the design, and commissioning the consultants to undertake the study; identifying staff to be interviewed or involved in the focus group activities and ensuring all parties were comfortable with the protocol set out. As project manager, and more importantly as participant observer of the WotF, I was able to continually reflect on, and engage with, the data that was being collected by the consultants. The research team used a range of quantitative and qualitative research tools to gather baseline data, track the case in progress, and collect post experiment data. Appendix A illustrates the design framework, and hence the protocol process for gathering data from the WotF. Slight variations within the overall protocol framework for each of the studies undertaken will be set out in the detailed discussions of each data source in this section.

The 'primary' data was, in many cases, secondary data to myself. It had been gathered by independent consultants and written into report format - it is acknowledged that the latter contains inherent biases, particularly as the consultants were commercially engaged in the process. Primary data, more specifically the questionnaire (A2.1), issued to staff, was constructed and issued by me as the researcher, but in the role most akin to that of an internal business manager and consultant. As project manager I was, to a certain extent, undertaking the

organisation agenda of seeking to identify what was working well within the project. Simultaneously as researcher, I was consciously building into the research investigation questions of not just what was working but why. In addition, and despite the focus of interest for the organisation being on the positive elements, I was genuinely interested in surfacing elements that were receiving negative feedback. Data source A3.2 shown in Table 3.2 and discussed more fully on page 246 is an example where I openly encouraged feedback from staff on elements that they considered unsatisfactory within the workspace.

In addition to the proactive challenging I undertook, the recognised limitations of method were counterbalanced by the multiple use of different data sources for analysis verification purposes. Multi-methods of data collection and the nature and sequence of activities undertaken to form the research design are displayed in Tables 3.2 and 3.3 to follow. These tables show both the chronological nature of the study and each data source used. Table 3.2 summarises the key data gathered from the main case, the WotF project. Table 3.3 summarises data gathered from the two sub-cases, FutureSpace and SkillSpace, along with relevant data in support of the main case. These tables aid as a visual snapshot of all data and allow references to be made in the discussions to follow.

DATA SOURCES DIRECTLY OBTAINED WITHIN THE CONTEXT OF THE CASE STUDY

Table 3.2

REF	Description	A3.1	A3.2	A3.3
A4	<i>Workplace observation Ongoing since December 1996</i>			
A3	<i>Participant Observation (Yin '94)</i> <i>Internal e-mails/papers/ Filenotes</i> <i>Documentation (Yin 1994, Stake, 1995)</i>	<p>A3.1</p> <p>Emails from staff. Issues with new teams settling in and tracking the settling period</p>	<p>A3.2</p> <p>E-mail issued to all staff in WotF, Futurespace and Skillspace to seek feedback on what aspects are satisfactory and unsatisfactory.</p>	<p>A3.3</p> <p>Issues in WotF and other spin out projects. Paper on "Developing Workspace Initiatives"</p>
A2	<i>Questionnaire to all staff based in WotF</i> <i>By Michelle Hynd</i> <i>Documentation (Yin 1994, Stake, 1995)</i>	A2.1		
A1	<i>Benchmarking and evaluation studies incorporating, one-to-one interviews, focus groups, individual's project records etc, (page 108)</i> <i>Documentation (Yin 1994, Stake, 1995)</i>			
		<p>A1.1</p> <p>Evaluation of WotF 'A benchmarking report'</p>	<p>A1.2</p> <p>WotF First Evaluation</p>	<p>A1.3</p> <p>WotF Second Evaluation</p>
		<p>A1.4</p> <p>WotF Final Evaluation (Pilot Period)</p>	<p>A1.5</p> <p>Summary of evaluations undertaken between 1996 & 1999. "All it needs is a lick of paint"</p>	<p>A1.6</p> <p>Evaluation of new teams settling in. "Update report".</p>
		November 1996	March 1997	July 1997
		June 1998	March 1999	October 2000

SUB-UNIT CASES AND BACKGROUND DATA SOURCES

Table 3.3

REF	Description	1996	1997	1998	1999	2000
B3	<p><i>Benchmarking and evaluation reports</i></p> <p><i>Documentation (Yin '94)</i></p>					
B2	<p><i>Space and Activity Study Externally commissioned</i></p> <p><i>Documentation (Yin '94)</i></p> <p><i>Direct Observation (Yin '94)</i></p>					
B1	<p><i>External Best Practice Forums</i></p>					
		1996	1997	1998	1999	2000

B3.1
 'Leap to Futurespace'
 Benchmark Report

B3.2
 Futurespace 1st evaluation study 'Whose space is it, anyway?'

B3.3
 Early review of Skillspace

B2.1

Study undertaken by BDP to identify and understand the work patterns of all staff in SE in preparation for the move to the new HQ. Results analysed & interpreted by American consultants in association with UK study team.

B1.1

Practitioner focused research and learning association founded by DEGW in 1991. Learning about re-thinking workplace strategies, seeking best practice in design and change management of the business workplace. Involved field visits to external companies such as; IBM UK Ltd, British Airways Waterside London, MOD, Price Waterhouse Coopers, Sun Life Bristol, Scottish Office Edinburgh, BRE Watford, BT Hemel Hempstead & Edinburgh, Powergen Coventry, Boots Nottingham, Capital One Nottingham, BBC London.

All data sources for the main case, WotF, highlighted in Table 3.2 will be discussed in detail below.

A1.1 Benchmarking Report – March 1997

Data gathered by PA & Hawthorn Consultants.

(Documentation, Yin 1994, Stake, 1995)

The approach taken captured a large amount of information from both qualitative and quantitative data sources. Data was gathered by:

- interviewing the chief executive and three directors who were responsible for the teams based in the WotF, to understand their perspective on the WotF project and this study;
- reviewing data captured previously (in 1996) by a questionnaire, used to inform the design brief when the project was at the design stage, and adding to this by issuing the questionnaire to newly identified participants;
- all participants completed a personal style inventory to establish personality types, individual perceptions and attitudes to workplace changes;
- individuals' project records which were held by staff members which involved self monitoring of their circumstances over time, the up-

keep of a personal diary, and frequent update discussions, (6 participants);

- interviews with customers (7 customers);
- focus groups (19 participants);
- non-participant interviews (4 interviewees); and,
- desk research review of cost savings experienced by other organisations undertaking workplace changes.

A1.2 First Evaluation – July 1997

Data gathered by Coopers & Lybrand & Hawthorn Consultants.

(Documentation, Yin 1994, Stake, 1995)

The first evaluation used a range of methods to gather data in an identical way to the benchmark study (A1.1), through:

- individual director/sponsor interviews (4 interviewees);
- focus groups (19 participants);
- customer interviews (7 customers);
- non participant interviews were increased to 20 in response to data gathered in the benchmark study source A1.1 that revealed some adverse perceptions of the WotF; and,
- individuals project records (6 participants).

A1.3 Second Evaluation – June 1998

Data gathered by Hawthorn Consultants.

(Documentation, Yin 1994, Stake, 1995)

The second evaluation was conducted in a similar fashion to the first incorporating:

- sponsor interviews (7 interviewees). This number has increased from four to seven due to re-organisation of the existing team structures and new directors recruited;
- focus groups (16 participants);
- customer interviews (10 interviewees);
- individuals' project records (5 participants); and,
- non-participant interviews were again increased from 20 to 40 interviewees. This was due to the concern felt at the lack of awareness of the aims and practices of the WotF project reported in the data collected in A1.2.

A1.4 Final Evaluation – March 1999

Data gathered by Hawthorn Consultants.

(Documentation, Yin 1994, Stake, 1995)

This was called the final evaluation as it marked the official close of the pilot period, which was two years from January 1997 to January 1999.

From this date on, the pilot became a 'normal' working environment:

because of its reported positive effects on staff and business it was adopted as an established new way of working. The study was conducted using the following data collection techniques:

- sponsor interviews (3 interviewees);
- focus groups (17 participants);
- individuals project records (5 participants); and,
- 40 non-participants were interviewed.

In addition to the qualitative methods, this final study also incorporated a questionnaire that was issued to staff who had been based in WotF over the previous two years. Self-completion questionnaires were emailed to 68 staff. 39 questionnaires were completed and returned with a response rate of 57%. Using current theory from the literature reviewed, and the questionnaire issued to staff in

WotF 17 months prior, I designed this questionnaire with the specific purpose of drawing comparisons over time.

A1.5 Summary of evaluations taken between 1996 & 1999

Data gathered by Hawthorn Consultants.

(Documentation, Yin 1994, Stake, 1995)

In October 1999 I, as practitioner, commissioned a study to review all the evaluations (A1.1-A1.4) undertaken. The intention was to review the impact of new flexible work environments and working practices in Scottish Enterprise since the WotF was initiated in 1996. This report was important because, since the WotF project, there had been ‘spin off’ mini projects that were trying to implement similar changes in workplace environments and they had mixed results. This study assisted with clarifying some of the variations between the different projects. It compared and contrasted workplace environment changes in each project and looked for patterns and/or emerging interesting issues. This was a desk based research task that involved reviewing data previously collected in documentation form, and blending this with workplace observations.

A1.6 Update Report – October 2000

Data gathered by Hawthorn Consultants.

(Documentation, Yin 1994, Stake, 1995)

Because teams continued to move in and out of the WotF, this fieldwork was an opportunity to review and capture information on some of the emerging theories and insights. A very 'traditional' team of 16 people who were not used to flexible working moved into the space. This was an opportunity to try and uncover the effects that it had on them. I felt this was a rich test best for exploring new theories. Information for the study was collected through a series of individual and small group interviews held in July 2000. These included:

- individual interviews with directors and senior managers (3 interviews);
- interviews with myself and two members of my team to talk about how we perceived the changes and settling in of new teams over the previous 12 months; and,
- focus group interviews with 15 participants who had moved into WotF within the past 12 months.

A2 Questionnaire issued to staff

Primary data gathered by researcher

(Documentation, Yin, 1994, Stake, 1995)

In autumn 1997, I constructed and issued a questionnaire to all staff based in WotF. The questionnaire was designed by drawing on both theory developed through reviewing the literature in the field of integrating workplace strategies, and organisational ecology; and was also informed by themes arising out of the first benchmark study undertaken in WotF (data source A1.1). Therefore, it serves as a clear demonstration of the ability to use multi-circumstances to inform the research process.

The questionnaire was issued to 57 staff in WotF in September 1996, which represented the full population of the WotF at that time – 29 individually completed returns were analysed, overall 51% of the population.

A3 Internal emails/papers/filenotes

Data gathered by researcher

(Documentation, Yin, 1994, Stake, 1995)

Bryman (1989, p.135) states that qualitative research is distinguished by the: “...priority accorded to the perspectives of those being studied rather than the prior concerns of the researcher, along with a related emphasis on the interpretation of observations in accordance with the subjects’ own understanding”. In the data gathered in A3, the perspectives of those under study are very distinguishable and direct, as they involved my intervention with the participants in the study. The interventions were tailored deliberately to seek further clarity and understanding of emerging ideas.

A3.1 Issues with new teams settling in and tracking the settling period.

This is a series of emails that demonstrate feelings and concerns of staff over the settling in and acceptance of a new team into the WotF. They also included emails from management, with respect to their aspirations for the move, and concerns from other resident managers about how their move would affect existing residents. There are 12 emails that supplement ongoing discussions from January to July 1999.

A3.2 Email issued to all staff to seek feedback on what is satisfactory and/or dissatisfactory in new work environments.

At this point, in November 1999, there was substantial data gathered via the evaluation processes (A1). Also, more recent events, such as the new 'traditional' team moving into the WotF, had raised some interesting insights. However, there was also the onset of uncertainty in my mind as to the staff's perception of the workspaces. This email was designed to enquire from staff what their views were on the aspects that are satisfactory and/or unsatisfactory in their new work environment. It was an open question issued to staff via email. The wording was as follows:

“We are now at the stage of preparing the briefing material for personal workspaces within the new HQ. In addition to the findings of the evaluation studies that you have participated in, we are seeking further views from people working within the flexible environments (WotF, Futurespace and Skillspace) on what works well and what doesn't work well in your office environment. This learning will be used to inform the brief. I would welcome your feedback via email by....”

27 people responded via email, some of whom had responded on behalf of their team.

A3.3 'Developing Workspace Initiatives'

As a result of feedback from staff in A3.2 above, I prepared a paper that was specifically designed to capture the key issues for staff and to make recommendations for change. The request for this paper came from the chief executive and three senior directors responsible for teams within each of the workspaces who wanted to understand further why change had been successful, or not, in WotF and the two sub-unit projects. This process enabled the data gathered to be moulded into specific areas for action.

The reports and transcripts of the data sources discussed above were used as historical transcripts of evidence for data analysis purposes. The importance of detailing each data source collection technique is to confirm that the reports and transcripts that were reviewed by myself for analysis were created within an appropriate context. Often, reviews of historical documentation are criticised for being taken out of context. However, the data sources discussed above are very specific to the case under investigation, and strengthened in validity by agreement on the protocol framework before initiating the inquiry, and then through sharing

the reported information with participants in the case study to agree it is an accurate reflection of the account.

3.6 Data Analysis and Management

As cited in Johnson (1998, p.62): “The process of analysing qualitative data is challenging to navigate as there is no conventional approach, as pertains in quantitative analysis. In addition, as qualitative data is usually part of an exploratory research design, there can be many captivating and varied interpretations to be found (Miles and Huberman, 1994). Wolcott (1995) has described the process of analysing qualitative data as an ‘art form’. He stresses that the interpretative insight of the researcher is one that is difficult to commit to paper (i.e. how a crucial connection between category A and category B dawns on one individual may, in some instances, be almost impossible to account for). But, no matter how difficult to order, qualitative research still demands that rigorous processes and practices are followed, and these in turn demand the adoption of an overall analytic strategy as an explicit means of approaching data interpretation”.

In case study, Yin (1994) outlines two basic options. The first of these is to rely on propositions as a means of interpreting the data, that is: exploring the data only in terms of proposed relationships between concepts and constructs. The second of Yin’s options is to develop a description of the case in an emergent fashion. In this

research, the latter approach was adopted, in order to analyse data and to assist with the building of theory. Case studies which generate theory grounded in the data of the study itself are not conducted in a theoretical vacuum, but contain a complex process of induction and deduction, guided by prior theoretical commitments and conceptual schemes (Schwandt, 1993).

In this case study, I had insight into and knowledge of the field of new work environments and new ways of working, gained through practical experience in the field, and hence a recognition of pre-conceived ideas is necessary. However, these ideas have been openly challenged and developed when working with the data in this research project, and subjectivity was stated from the outset.

It is unlikely that any researcher could genuinely separate the two processes of induction and deduction. Richards (1993, p.40) suggests that: "...both (prior theory and theory emerging from the data) are always involved, often simultaneously" and that: "...it is not possible to go theory-free into any study."

Miles and Huberman (1994, p.17) also conclude that induction and deduction are linked research approaches. Their own empirical experiences have led them to emphasise the importance of "prestructured research" for new qualitative researchers working in areas where some understanding has already been achieved, but where more theory building is required before testing can be done, as is the case in this research project. Thus, some prior theory can have a pivotal function in the

design of a case study and analysis of its data. Pure induction might prevent the development of new and useful theory. Parkhe (1993, p.252, 256) argues that: "...both extremes are untenable and unnecessary" and that the process of ongoing theory advancement requires "continuous interplay" between the two.

In accordance with the findings presented in the literature, an attempt was made to avoid any limitations in seeking new theories by applying a mix of research approaches: deduction and prior theory techniques were used when designing the frameworks for data collection.

3.6.1 The Data Analysis

The framework for analysis is very important. The analysis must produce findings that are significant, complete, considered alternative perspectives and displays sufficient evidence, which is written in a composed and engaging manner (Yin, 1994). Data analysis can include explanation building, pattern matching and time series analysis (Yin, 1994). Morse (1994) suggests comprehending, synthesising (drawing together different themes from the research and forming them into new integrated patterns) and theorising, which is confronting the data with alternative explanations. While Miles and Huberman (1994) suggest that to analyse data the process should include data reduction, data display and conclusion drawing/verification. Researchers must summarise the data and then use the

summaries to construct generalisation to confront existing theories or to construct a new theory. These techniques centre on data reduction which usually involves coding and organising the data into a manageable and condensed form; structuring data (which was achieved through the agreed protocol as it related to the framework of the research) and detextualising the text, which necessitated arranging the data into categories and concepts.

Open coding (Yin, 1984, Stake, 1991) was used by the researcher when analysing the data sources. Each data source had extensive volumes of information associated, and drew upon the 'write-up' documents which are referred to as historical data or transcripts in this case (Yin, 1984). Gomm et al (2000, p.82) say: "Documentary information is likely to be relevant to every case study topic. The usefulness of these is not based on their necessary accuracy or lack of bias. Infact documents must be carefully used and not be accepted as literal recordings of events that have taken place. When working with documents as primary data care should be taken of the validity of a document. It may have been written for a specific purpose and some specific audience other than those of the case study being done. Documents play an explicit role in any data collection."

Bearing in mind these criticisms and the challenges of dealing with historical data, it was recognised that there could be potential for the documentation to contain bias from the 3rd party consultants. Each of the data sources was treated as historical transcripts for analysis, hence reviewed and open coding (Yin, 1994) was applied.

A particularly expansive variety of transcript data for analysis was gathered in each of the sources A1.1-A1.6.

The main challenge in coding the data was interpreting the staff's perspectives. As it was an historical review of the data gathered, analysis of transcripts written by the 3rd party consultancy organisation was required, and thus consideration of their interpretation was given. This brought both emic and etic perspectives into the analysis and, hence, provided a balance of views. Perry (1999) states that data analysis is usually summarised in an interpretative, necessarily value-laden, way but with an awareness of the presence of those values.

Perry (1999) says that realism researchers do not need to map all the details of an interviewee's subjective reality, they merely look through some parts of that reality at an external reality, and manual coding of data can be adequate for that process. At the first stage of coding, using within case analysis (Eisenhardt, 1989, Yin, 1994) in which each incident was assigned to an emergent open coding scheme, there were 120 codes produced. Through comparison, these 120 were reduced to 45 codes. These 45 codes identified from the data are shown in appendix B.

Sandelowski (1995a, p.373) observes that analysis of texts begins with proof reading the material and simply underlining key phrases "because they make some as yet incoherent sense". Open coding was an attempt to break down, analyse, label and categorise the data. It was undertaken in a chronological, and comparative

manner (Yin, 1984; Stake, 1991; Eisenhardt, 1989). Pettigrew (1985) suggests that longitudinal research, which focuses on a small number of organisations over long periods of time, should gather 'time series data'. In this way explanations should emerge from examining patterns in the process of change. The main practical advantage of this is that it can produce significant results from a very small number of cases and this can reduce the problems of gaining access into organisations. The disadvantages are that it is extremely time consuming and the complexity of data requires very high skills from all researchers involved.

Additional data was blended by myself, from discussions and observations gathered as a participant in the case study. This enabled the comparison process and grouping of similar incidents.

When reviewing the data for both within case and then cross case comparisons of patterns to seek further explanation, a time series pattern was used. It was found from the data that over the longitudinal aspect of the data gathered particular categories were emerging. There were five main categories that emerged as a result of seeking time series patterns from the data sources. In summary, the five categories identified are (1) Physical Environment Design, (2) Information Technology, (3) Have and Have Not's, (4) Communications, (5) Team Working. More details for the five categories that emerged are attached in Appendix C.

Given that the data was gathered from sources in a framework that embraced some of these as areas of interest and investigation, the emergence of these categories was not overly surprising and, on reflection, one may conclude that they were a result of the process of the data collection design.

Consideration of the data generated in the case study, along with the categories generated from the analysis and the involvement as a participant in the case, revealed the need for another option to aid development of theory from the analysis. Reflecting the desire to practise within the realms of the realism paradigm, other perspectives of the single reality and case were sought.

An attempt to develop fresh insights into the existing and expansive data resources was made. Although open coding had been applied to the data sources and the key categories were identified, there was no conviction at that stage that the 'baggage', or the framework used for data collection, had not influenced both process and outcome. Coding enabled a richer context for developing ideas. The process of reviewing and grouping codes made it easier to broaden insights from the data. However, there was still a need to identify relationships between categories and to search for over-arching explanations for behaviours observed.

Pettigrew (1990) suggests that the juxtaposition of seemingly similar cases by the researcher looking for differences can break simplistic frames. In the same way, the search for similarity in a seemingly different pair can also lead to more

sophisticated understanding. The result of these forced comparisons can be new categories and concepts the researcher did not anticipate.

Eisenhardt (1989, p.533) suggests that:..."cross case pattern searching forces investigators to look beyond initial impressions and see evidence through multiple lenses."

The case study analysis will be presented in chapter four, incorporating descriptive write up, and cross case analysis of the case and sub-cases. A descriptive write up of the case was undertaken to assist the articulation of emerging theory. In writing up the case study and building explanations, both simple language and straightforward ideas assist in making theory readable (Richardson, 1990).

Although the analysis of the data provided clarity and insight to the case study, there was concern that the audit trail of how conceptualisation, and the leap to the point of understanding for the researcher, had become disconnected from the analysis of the data. The case study and findings from the data analysis will be displayed and discussed in Chapters four and five. Eisenhardt (1989) states that development of a theory is a central activity in organisational research, and offers a 'roadmap' for building theories from case study research. The application of this roadmap was undertaken within this research, in order to establish a strong connection between the data analysis in chapter four leading to theory building in chapters five and six.

3.6.2 Building Theory from The Case

There has been a lack of direction for data analysis and a lack of clarity around building theories from case based research, and the challenges for qualitative studies have been well documented (Eisenhardt, 1989; Bryman and Burgess, 1994; Huberman and Miles, 1998).

Easton (1998) discussed the case based research within a realism paradigm: "Case studies which would wish to lay claim to a realist epistemology must be carried out in a different way; to be inquisitive, to look for the roots of things, to disentangle complexities and to conceptualise and reconceptualise, test and retest to be both rigorous and creative and above all to seek the underlying reality through the thick veil which hides it" (Easton, 1998, p.380).

This research will aim to hear and see what is done in practice within the new work environments of one organisation. This leads to an in-depth study of one case rather than a global view of organisations. It is directed at theory building, in the sense that it tries to establish how new work environments affect organisations and arrive at a tentative model of understanding this process. Case method is used as only a close relationship between the researcher and subjects will elicit the confidential, detailed and actual usage information in relation to the new work environments. There is a need to really understand the phenomena.

Eisenhardt (1989, p.75) states *"analysing data is at the heart of building theory from case study, but it is the most difficult and least codified part of the process. Because published studies generally describe research sites and data-collection methods but give little space to discussion of analysis, a huge chasm often separates data from conclusions"*.

"One cannot ordinarily follow how a researcher got from 3600 pages of field notes to the final conclusions, sprinkled with quotes vivid though they may be" (Miles and Huberman, 1984, p.16).

The major challenge in data analysis centres on theorising, as in building theories or recontextualising or returning to existing theories, placing results in context and establishing any new linkages and models. Eisenhardt (1989) suggests a procedural process utilising steps towards a case analysis, by searching for cross case patterns, which should lead to shaping the hypothesis through the development of themes, concepts, verifying relationships, linking the theory back to the literature and ultimately reaching closure.

This process for building theory from case based research included steps from getting started to reaching closure and the activities and reasons associated with each step. This research design follows the Eisenhardt (1989) framework for building theory from case research and Table 3.4 below provides an overview of the research design adopted to build theory from this case study;

Step	Activity	Reason	This research
Getting started	<p>Definition of research question Possibly a priori constructs</p> <p>Neither theory nor hypotheses</p>	<p>Focuses efforts Provides better grounding of construct measures</p> <p>Retains theoretical flexibility</p>	<p>Neither theory nor hypothesis were established to test at the start. Some prior knowledge from the literature informed the process. The aim of the research inquiry was to contribute to an increased understanding of new work environments. This was aided by the use of two research objectives. The first focused specifically on the role of the physical environment the second focused on identification of key elements and relationships within new work environments.</p>
Selecting cases	<p>Specified population</p> <p>Theoretical, not random, sampling</p>	<p>Constrains extraneous variation and sharpens external validity</p> <p>Focuses efforts on theoretically useful cases - i.e., those that replicate or extend theory by filling conceptual categories</p>	<p>The main case and sub cases were chosen for theoretical reasons - those in which the phenomenon of interest was transparently observable and for revelatory purposes. The opportunity for gaining longitudinal and deep access was key criterion.</p>
Crafting instruments and protocols	<p>Multiple data-collection methods</p> <p>Qualitative and quantitative data combined</p> <p>Multiple investigators</p>	<p>Strengthens grounding of theory by triangulation of evidence</p> <p>Synergistic view of evidence</p> <p>Fosters divergent perspectives and strengthens grounding</p>	<p>Multiple data methods were used including observations, historical review of documentation that was created within an agreed research protocol, and questionnaire. These incorporated both qualitative and quantitative data. Two investigators were involved - myself and a 3rd party consultant.</p>
Entering the field	<p>Overlap data collection and analysis, including field notes</p> <p>Flexible and opportunistic data-collection methods</p>	<p>Speeds analyses and reveals helpful adjustments to data collection</p> <p>Allows investigators to take advantage of emergent themes and unique cases features</p>	<p>Data collection and analysis was continually overlapping during the longitudinal aspect of the research - over 4 years. Enabled by my embedded role. Creation of interventions were undertaken to seek more information about emerging themes.</p>

Analysing data	<p>Within-case analysis</p> <p>Cross-case pattern search using divergent techniques</p>	<p>Gains familiarity with data and preliminary theory generation</p> <p>Forces investigators to look beyond initial impressions and see evidence through multiple lenses</p>	<p>Open coding applied within case analysis. Details of the main case and sub-case presented in the descriptive write-ups (chapter 4, section 4.2).</p> <p>Cross case analysis was undertaken and cross case comparisons presented (chapters 4 and 5).</p>
Shaping hypotheses	<p>Iterative tabulation of evidence for each construct</p> <p>Replication, not sampling, logic across cases</p> <p>Search evidence for "why" behind relationships</p> <p>Comparison with conflicting literature</p> <p>Comparison with similar literature</p>	<p>Sharpens construct definition, validity, and measurability</p> <p>Confirms, extends, and sharpens theory</p> <p>Builds internal validity</p> <p>Builds internal validity, raises theoretical level, and sharpens construct definitions</p> <p>Sharpens generalisability, improves construct definition, and raises theoretical level</p> <p>Ends process when marginal improvement becomes small</p>	<p>From analysis used the multiple sources of evidence to build constructs and relationships, hypotheses were shaped, definitions of constructs refined and evidence, which measured those constructs, were built and presented in the case study (chapter 6).</p> <p>Replication across cases was undertaken but limited due to the access and data constraints of the sub-cases (chapter 5).</p> <p>Comparison with similar literature was undertaken but limited due to the lack of established theory within the focal literature. The emergent theories and concepts were compared with literatures such as the hygiene/motivation theories, which presented both conflict and similarities enabling deeper insight and creative thinking to emerge.</p>
Reaching closure	<p>Theoretical saturation when possible</p>		<p>The iteration between data and theory ceases when the contribution to theory is minimal, but time and costs also determined the duration of the case to be studied. The move of the organisation to new premises determined the end of opportunity to research the case.</p>

Source: *Adapted from Eisenhardt (1989)*

3.7 Conclusion on the Realism Paradigm and Methodological Discussion

The aim of this research is to identify, illustrate and analyse a range of issues surrounding the pilot workplaces within SE to contribute to an increased understanding of new work environments within organisations.

It has been argued that the realism paradigm is appropriate for researching complex social phenomena because of the nature of its reality; the required relationship between reality and researcher, and the related methodologies. The mixed methodologies of objective and subjective contribute to deeper understanding and allow maximum use of the data sources. Case study is well established in qualitative research tradition. As a methodology, it is especially appropriate to research questions of 'why' and 'how', and it offers researchers a flexible yet integrated framework for holistic examination of a phenomenon in its natural state (Yin, 1994; Stake, 1995; Merriam, 1998; Gomm et al, 2000).

As argued conclusively, the case study method can accommodate different epistemologies and has application to a wide range of disciplines, especially in the social and behavioural sciences. This polymathic quality is particularly important in this thesis, where the literature and data span many disciplines. Case study is exceptionally useful for exploratory research, theory generation and examination of atypical phenomena. It is particularly appropriate for applied research related to contemporary issues of people in the real world. There appears to be a growing trend away from considering case study exclusively and reflexively in a qualitative context, to a more expansive view of case study as an adaptive research structure

that can accommodate qualitative and quantitative perspectives, techniques and standards, as applied in this thesis.

In the realism paradigm and case study methodology chosen, it was the intention to maximise understanding of the case in specific detail, and over a specific period of time. It is recognised that, if another researcher was to adopt a similar approach with a different case in another timeframe, the findings of this study might not be generalisable.

The limitations of the complex approach were considered in this chapter - the most salient to this work being a lack of generalisability. That deficit, though acknowledged, was accepted because the main focus of the research was the gaining of rich informative descriptions and increased understanding from the research designed for this specialist study.

The aim of this chapter was to present the phenomena under study: a deeper understanding of new work environments; the methodological paradigm, and the research design used in the study. The appropriateness of mixed methodological approaches has been confirmed, as maximum use of data sources was afforded and different perceptions of the one 'reality' were realised.

In conclusion, methodologically this research provides an example of research within the realism paradigm using a case study method. This chapter justified this choice as the most appropriate paradigm and method to respond to the research objective of this study.

Chapter 4

ANALYSIS OF DATA

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4.1 Introduction

Following on from chapter three, which outlined the methodology used in this thesis, the aim of this chapter is to present and analyse the data collected. The data analysis undertaken in this chapter will aim to increase understanding of new work environments and discover the key component elements; first, to understand the role of the physical design aspects in a new work environment and, second, to identify the key elements present and their inter-relationships within new work environments.

This chapter is structured around five sections. First, this introduction which outlines the structure of the chapter, followed by a description of the main case study and two sub-case studies in section two. Section three follows with the case study write up, which provides detailed accounts of events that took place in the main case study and the two sub-cases. Data analysis provided emerging thoughts that were articulated intentionally to relay the vicarious experience of the case in its richness and complexity (Lincoln and Guba, 1985) as I experienced it over the four years, both as a participant and researcher. Langer (1953) and Mann (1969) refer to this as the 'lived-in' aspects of experience. The descriptive write up is chronologically presented, and purposely provides an insight to the case study that would not come from analysis of the data sources alone. The focus in this write up is predominantly mediated through myself, as both a research subject and the research instrument. To complement and build on the write up, comparisons will be drawn between the main case and the two sub-case studies in section four. In keeping with the realism paradigm discussed in the methodology chapter, the result of this analysis will

provide a window onto the reality, through myself as the researcher. Finally, section five will provide an overall summary of this chapter.

Whilst a critical engagement with the literature will be inherent within this chapter, there is no attempt either to draw general conclusions, or to compare and discuss final findings in that context. This will be undertaken in chapter five to follow.

4.2 Scottish Enterprise the Host Organisation

The primary role of Scottish Enterprise (SE), the host organisation for this case study research, is to enable and support economic development in lowland Scotland, to help generate jobs and prosperity for the people of lowland Scotland. The organisation employs around 2,000 staff, approximately 700 of whom are based in the Glasgow offices referred to in this case study. In order to fulfil its role effectively, SE recognises the importance of understanding and responding to change. In advising and supporting Scottish business in this respect, SE also recognises the importance of leading by example, to ensure its own operations, interventions and impacts are as effective as possible. SE placed emphasis on developing strategies for the challenging demands of the new millennium and the onset of the 'knowledge economy' (Bailyn, 1988; Drucker, 1993; Blackler, 1995; Castells, 1996; Prusak, 1997; Alavi and Leidner, 1997; Quintas et al, 1997; Nahapiet and Goshal, 1998), recognising that the pressures of change come from many sources. Rapidly accelerating technologies; changing demographics and the

implications for attracting and retaining staff; global competition; maximising knowledge as an asset; and partnership and collaboration are all areas that have been the subject of extensive research and development over recent years within the organisation.

During the period of the research, SE occupied two 1960's buildings on Bothwell Street within the City of Glasgow, located as shown in yellow highlight in Figure 4.1 below.

Figure 4.1 Map of SE locations within Glasgow



Between these two buildings, all 700 staff were accommodated. In one building, SE occupied all seven levels of office floorspace, and in the other, four levels out of six were occupied. The buildings were directly opposite each other on Bothwell Street,

Glasgow. SE occupied the buildings for over 30 years, and as the structure of the organisation changed, teams moved around within the buildings. However, there were limitations, and often, as structure changes took place within the departments of SE, the teams could not re-form nor co-locate due to the inflexible internal layout of the buildings. Hence, if a merger of two departments occurred, they would remain at a distance and try to work across the different physical locations. Sometimes this would involve a split over a couple of floors in the same building. Other times, they were split across the two buildings, and in this scenario staff had to avoid the busy traffic flow when crossing the main road to liaise with other team colleagues.

Technology plays a key role in the organisation, with every member of staff having either a personal computer or, more often, a laptop computer. The growth in the use of technology in the organisation was fairly rapid. In the late 1980's the first personal computers were introduced, with most internal forms of communication being typed memos printed off and circulated in the internal mail, and with a 'turnaround' response time averaging one week. In the early to mid 1990's, the onset of email reduced the use of internal mail for circulating memos and also reduced the contact and response times to a day or two. Email became the most commonly used form of communication by the late 1990's. It was often the chosen tool for internal organisation communication, even outweighing the use of the telephone.

The email system and increased use of IT generally across the SE Network meant that all staff were able to communicate quickly with other colleagues, despite

location differences, and were also more aware of organisational information. Previously, certain communications would be channelled to Directors or Senior Managers and the responsibility would rest with them to choose the most appropriate way of disseminating the information to their staff. However, most organisation communications are now issued to all staff for information simultaneously via email.

This could be viewed as a balancing of 'power'. Where information was once deemed as powerful, its dispersal took that role and responsibility away from management and engaged all staff in the process of communication. This reflected the shifting values and intentions of SE which, like other private and public sector organisations in the late 20th century, was recognising the importance of every individual within the organisation, and the speed of sharing information with all staff, to increase their understanding and potential contribution to the organisation.

Despite the advances made by introducing new technologies, SE believed that the physical infrastructure of the two buildings stifled innovation, reduced the opportunity for collaboration, cross team working and knowledge sharing, and did not foster the transparency that SE wanted to adopt. The floorplate layouts within the buildings consisted mainly of cellular offices. As the workpatterns of staff had been evolving since the 1960's, knowledge sharing and team working were becoming increasingly important factors in effective working, and staff experienced difficulty in finding spaces within the buildings that could facilitate the opportunity for working together in new ways. Over time, they began to meet in off site locations which better suited the activities and needs they had. This often included

an element of homeworking. Instead of travelling to the office, which had become routine in the morning rush hour, many began to work from home and travel direct to their client's offices, or to meetings that were arranged in other locations throughout the day. Space utilisation studies verified the anecdotal evidence that new work patterns had an effect on the utilisation of premises. At any one time, typically 50% of the cellular offices within Bothwell Street premises were unoccupied.

There was a view held by management, which was primarily deterministic, that the re-design of the physical environment would change the social aspects of the workplace – such as culture, creativity, working relations and effectiveness. In an attempt to redesign the physical workspace to reflect and further support the workstyles of staff, and to increase effective use of space within the organisation, the three projects detailed below were initiated. The first, WotF project, was purposely timed to promote increased understanding of how the building design could act as a catalyst for change, particularly as SE was planning to move to a new head office in late 2001. The effects of this project would be crucial in informing the design of the new head office building. There was a desire to understand if the design of the physical environment could create an opportunity for increased productivity of staff, and improve organisation performance overall, as suggested in the literature discussion in chapter two (Laing, 1993; Duffy, 1997; Turner and Myerson, 1998; Bradley and Osborne, 1998).

4.2.1 The Workplace of the Future (WotF)

The first, and main project was the Workplace of the Future (WotF). This was a physically redesigned office space within Scottish Enterprise's main premises in Glasgow, within a prominent ground floor area (highlighted by the green circle in Plate 1 below). It was approximately 540 sq.m in floorspace, with around 70 staff based within it at any one time.

Plate 1: Scottish Enterprise premises in Bothwell Street



The WotF project was established in 1996 and the key objectives of the project were:

- to exploit the business benefits enabled by technology changes, new ways of working and innovative workplace design;

- to test out a range of futuristic workplace concepts;
- to develop a positive, productive and creative workplace culture; and,
 - to develop and share associated best practice.

The first objective mentions the business benefits; for clarity and future reference, these were anticipated by the organisation to be increases in employee productivity and satisfaction levels. Demonstrating the deterministic prediction.

The key value component of this project was the integrated approach to implementing the objectives, typically described in the literature as 'Total Workplace and/or Integrated Workplace Strategy' (Becker and Steele, 1995; Bradley and Osbourne, 1998; Thomson and Warhurst, 1998; Neef, 1999).

The staff based in WotF were a representative cross section (in terms of both role types and grades), who were prepared to experiment with new ways of working, and were selected on a voluntary basis. There were both support (primarily office-based) and operational (more nomadic and externally customer focused) teams involved, allowing the WotF worksettings to be used by a wide range of people with different workstyles. This is a key factor that made WotF substantially different to examples cited within private sector organisations; e.g. IBM (IBM UK, 1998) and British Airways, (Jones, 1998); which focused mainly on providing flexible space for sales or customer services staff who would spend very little time in the office.

The interior décor within the premises of SE was bland throughout with a colour scheme of beige and soft greens. Plate 2 below shows the empty shell of the WotF before the fit out was undertaken. This demonstrates the style and colours within the office space that the staff were used to working in.

Plate 2: shell of WotF before redesign



In contrast, the interior design objective of the WotF was to create a bold, bright and lively environment to stimulate and energise staff. This psychological element of differentiating the WotF image from the rest of the SE office space was important in supporting cultural and behavioural change. The strong colours were intended to act as a reminder for staff that they could be trying out new, and more innovative ways

of working and thinking, by trying out new worksettings and sharing resources with their colleagues.

Plates 3 and 4 below demonstrate the differences in colour and layout of the new WotF office compared to the old office.

Plate 3: open plan space within WotF



Plate 4 below shows an example of a typical office space within other parts of the premises, that remained the same and was not affected by the WotF changes. This demonstrates the two contrasting work environments within the organisation.

Plate 4: typical open office space within Scottish Enterprise



Upon entry to the WotF there was an immediate visual connection with the 'buzz' and activities offered by the panoramic view from above. The concierge, who provides a 'soft policing' role in the workplace, is situated at the bottom of the stairs at the SpaceCentre to provide a welcoming point on arrival.

Plate 5: WotF entrance area



Typically, the concierge based at the SpaceCentre co-ordinated staff enquiries related to the workplace, regarding matters such as facilities management, or information technology trouble-shooting. It was felt that the daily management of the workspace was crucial to its smooth operation, particularly in the early days. If staff forgot to cancel a booked room, or worksetting, the concierge would immediately cancel the booking to ensure maximum use of all resources wherever possible, and hence a good utilisation of space. The concierge would provide information and demonstrations of the WotF to external visitors and enquirers regarding new work environments, in order to share knowledge and best practice with other organisations.

The features shown in Plates 6 and 7, such as the fish tank and flowers, were an attempt to blend homely aspects to soften the workplace.

Plate 6: fish tank



Plate 7: flowers

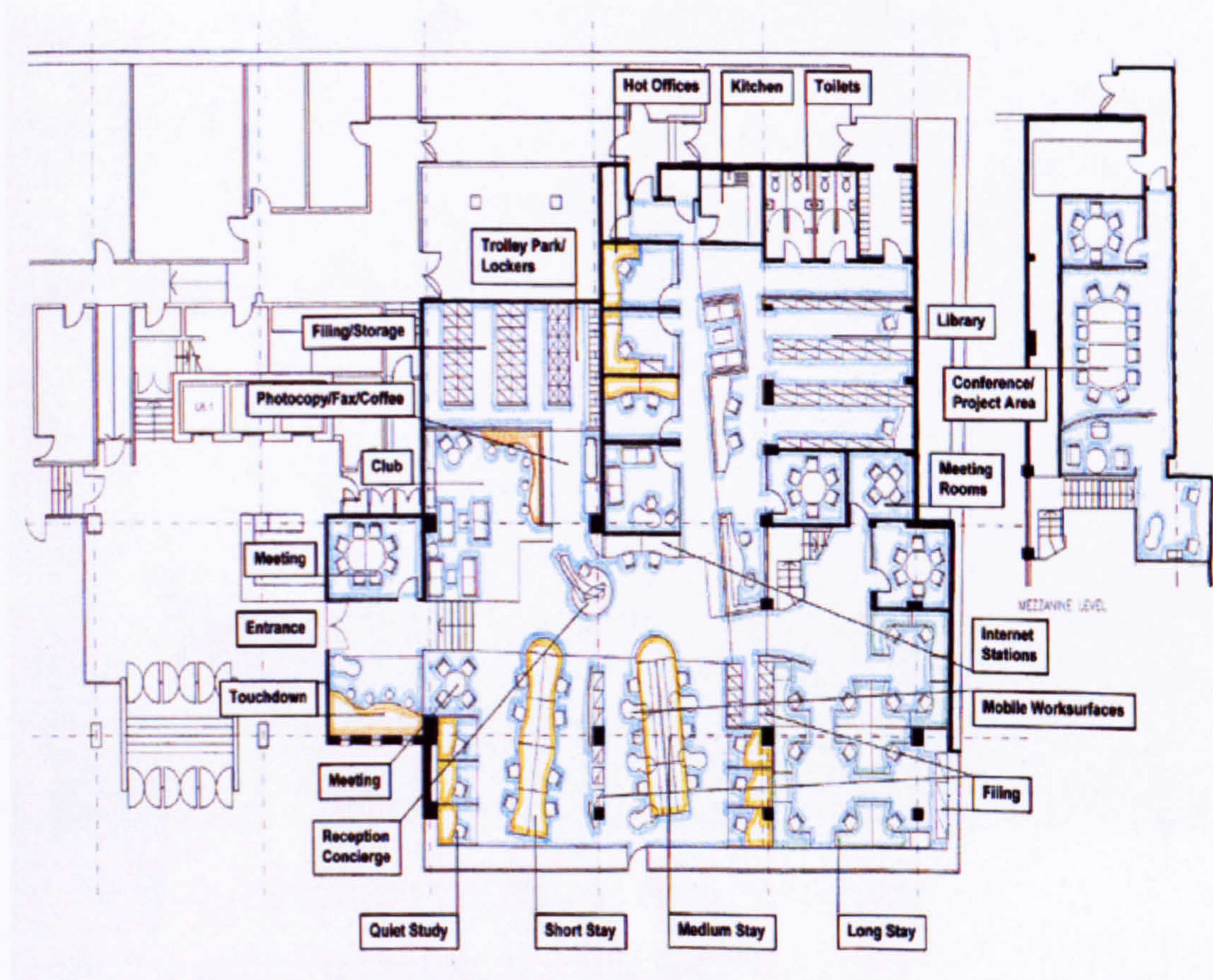


The organisation's espoused desired cultural change was towards flat and flexible structures of management, including openness and transparency in the workplace. In recognition of this, a key design objective was to create an environment that was free from visible hierarchy and status symbols. The office design embraced a choice of open and enclosed worksettings for all flexibly working staff to use, in order to facilitate staff to select the space most appropriate to the task in hand. These flexible worksettings were bookable by all flexible workers on a first come basis - not dependent upon grade or status.

In addition to the flexible worksettings, there were 14 permanently used desks, which were dedicated to individuals who were in the office for more than 80% of their time and based almost continually at their desk. These individuals tended to be in policy development roles or administration support positions, and each one made a justification case to have a permanent desk within WotF, based on their workpatterns and activities.

Plate 8 below shows a sketch of the layout of the WotF and the respective location of all worksettings and types of spaces. The worksettings and spaces were zoned by type of activities and length of stay for users, such as meeting spaces, short stay or long stay worksettings.

Plate 8: internal layout of WotF



Overall, the choice of worksettings offered in the WotF included: permanent desks (14), hot desks (14), carrels (5), hot offices (3), touchdowns (2 – each accommodating 4 people, hence up to 8 people in total), informal and formal meeting spaces, and each will be discussed in turn below. There were 70 staff overall, with 14 working from the permanent desks. This left 30 worksettings for 56 flexibly working staff to choose from. This does not include the formal and informal meeting spaces.

Plate 9: permanent desks in WotF



All of the 14 permanently allocated desks, as shown in Plate 9 above, were identical in size and offered no signs of status amongst the staff based there. Each had the same technology set up, and filing storage pedestal underneath the desk. Some senior management were based within the core of their teams for the first time since joining the organisation. This was an unusual situation for staff and management, to be so openly exposed and available to each other.

The hot desks, shown in Plate 10, were similar in size to the permanently owned desks and were to be booked by any flexible worker.

Plate 10: hot desks in the open plan space



Carrels, similar to the notion of library study booths, offered a degree of privacy although they were still in the open plan environment. These carrels were positioned within the main open plan areas of the WotF, hence did not actually offer much privacy. However, they intentionally signalled to staff that the occupant did not want to be disturbed when working there.

Plate 11: carrel in WotF



Hot offices, as shown in Plate 12 below, were designed for private or quiet concentration work. Many staff did not take up the option to work from home, and would often book these for maximising privacy and reducing their chances of being distracted, as would often happen in the buzz of the open plan spaces. There was variety in the size of hot offices and some could accommodate three people working together at any one time. Most often, they were occupied by only one member of staff.

Plate 12: hot office in WotF



Touchdown areas were designed for short stay working in the office, or for staff to use between meetings throughout the day. The power and data points were located on the surface for ease of access and flexibility for the user. Also, laptops and other office tools, such as mobile phone chargers, could be connected quickly. Typically, staff would set up their laptops at the touchdown when they arrived in the office, and then return between meetings to send or receive emails periodically throughout the day.

Plate 13: touchdown area in WotF



The touchscreen booking system enabled staff to book any worksetting of their choice upon arrival in the office. It was not available externally to the WotF. The booking system served as a valuable management tool, in that it allowed the concierge to understand and respond to the work patterns in the office, and to the needs of its customers, through the management information it provided about the space usage.

Plate 14: workspace touchscreen booking system



In addition to the choice of personal worksettings, social and interaction spaces, such as the e-mail café, the project room and a combination of mixed use meeting rooms/areas were incorporated, as shown in Plates 15 –20. These were designed particularly in response to the recognised need for knowledge sharing opportunities and the ability for team working within the office space, most of which had been missing from the original workspace.

The Café was designed as either an informal meeting space for internal staff, or for holding meetings with customers who were comfortable in such spaces. Vending facilities and relaxing seating were amongst some of the features, shown in Plate 15 below. In this space, there was also a large blue circular board on the wall with pictures of staff pinned on it. This was an attempt to create a community feel and sense of sharing knowledge, or information, about each other.

Plate 15: the Café in WotF



The email/internet café shown in Plate 16 below is a space where staff could log onto the computers to send or receive emails, or to access the internet. Staff could use these computers for 20 minutes at any one time, after which they would be expected to log off for others to use. Over time, some staff did not bother to bring their laptops into the office for short periods of working – they often just used the email café between meetings.

Plate 16: internet Cafe in WotF



Additional meeting spaces, formal and informal - as shown in Plates 17 - 20 - were available, and the individual could choose the most appropriate space based upon their knowledge of their customers and the content of their meeting.

Plate 17: informal meeting space in WotF



Plate 18: example one - formal meeting room in WotF



Plate 19: example two - formal meeting room in WotF



There was a mix of formal meeting rooms, ranging from a traditional table and chair layout to a more relaxed lounge or sitting room style. The choice rested with the individual to request the most appropriate room when booking.

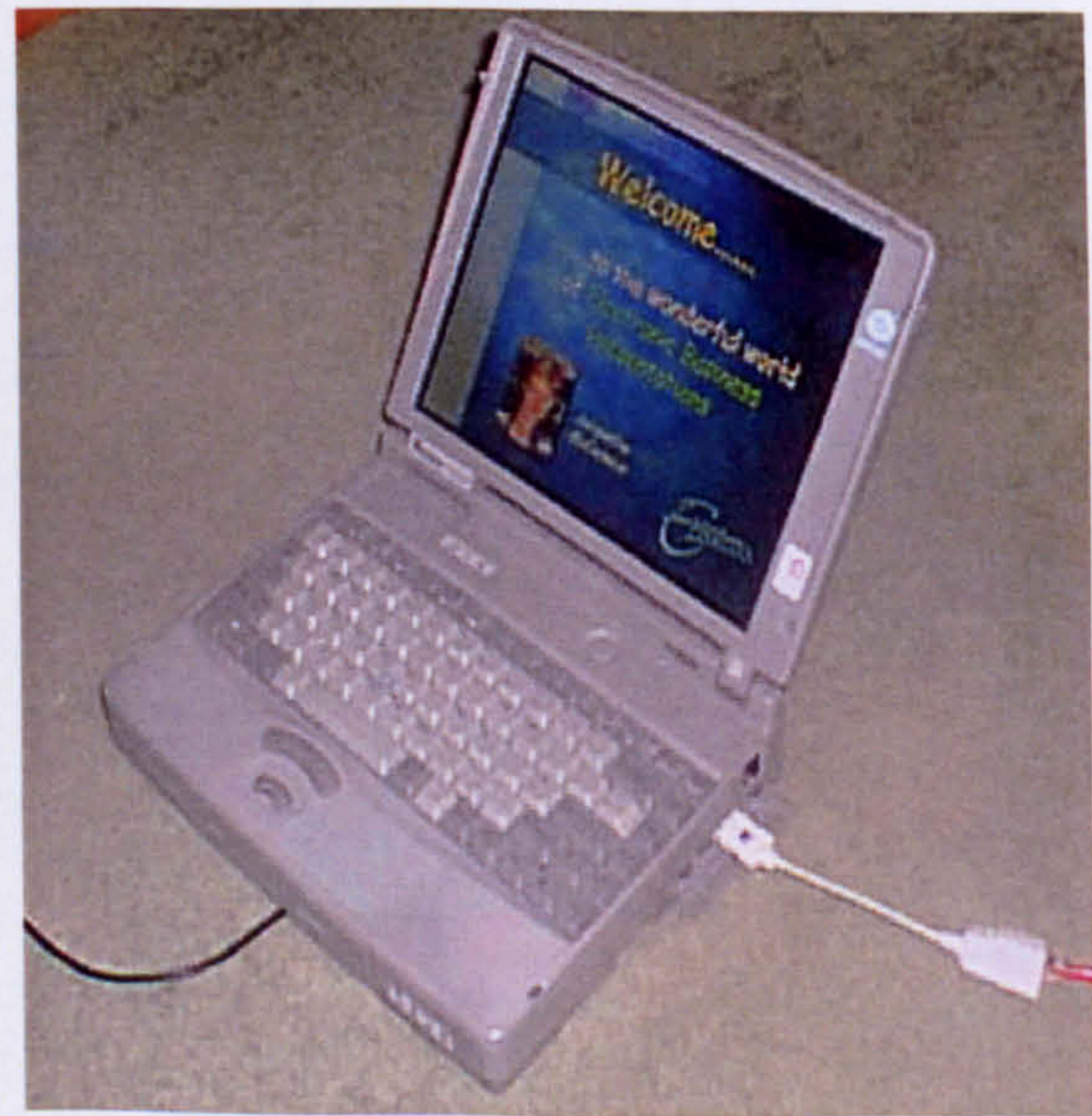
Plate 20: example of informal meeting room in WotF



Technology was provided to support staff to work flexibly and to be location-free, both within and externally to the office. With the use of 'follow-me' phones, staff could programme their calls to the location of their choice: to any worksetting within the WotF; or, to their home telephone line, mobile phone, or hotel room phone. That way, the individual was not tied to one worksetting or location if s/he was waiting for a customer to call. Customers could now reach staff at any location by dialling the individual's direct line, or the main office number. To the customer, it was a seamless service. Laptop computers further supported the freedom to work from any location: these were configured to work on any worksetting within the office, or from out of office locations like home, via ISDN; train via mobile telephone connections; or, in the customer's office via telephone line dial up modem.

Plate 21

mobile dial up connections for laptops



Within the office, flat screen technologies and infra-red keyboards and mice were introduced to support the flexibility of worksettings. The flat screens were smaller and thinner than conventional screens, and the infra-red keyboard and mice could be moved to any location, on or off the desk, without the restriction of cables or wires. These technologies utilise less desk space, emit less heat and reduce the requirement for cable management systems in furniture. They also offer the individual more flexibility and choices over the variety of equipment to use at each worksetting, and the ability to move the equipment easily off the desk if the surface requirement – say for paperwork – is increased.

Plate 23: hot desk with flat screen, infra-red keyboard and mouse in WotF



Cordless phones, as shown in Plate 24 below, were provided for staff and customers to use while in WotF if they were not using a workstation with a fixed telephone. Typically, these worksettings could include the café area or informal meeting spaces. This allowed for freedom of movement and increased contactability for the individual. The main advantage was that staff had the ability to be contacted in every part of the WotF office if required. Many staff would move from their hot desk to the café area for a coffee, or a short break, and would have the confidence that they could still receive customer calls.

Plate 24: cordless phone



An 'ideas board' was introduced to provide a vehicle for staff to put comments, or suggestions for consideration, regarding the development of the WotF. One such suggestion revolved around the need for privacy, where individuals reported that they enjoyed the openness of the office and recognised the ability to have privacy

when needed by booking a hot office. However, they often found themselves booking a meeting room, or hot office, just to make a private telephone call. The suggestion made was to identify a place that could be used for making confidential telephone calls, which would not involve the booking of prime office workspaces, such as meeting rooms or hot offices. In response to this suggestion a small soundproof telephone booth was introduced in the storage area as shown in Plate 25 below.

Plate 25: telephone booth



4.2.2 The Sub-Cases – FutureSpace and Skillspace

Due to the view in the organisation, that the WotF was a success, two similar projects were initiated. The two ‘spin out’ projects emerged in other parts of the buildings, deliberately attempting to replicate the WotF concepts (in general to gain a positive return on productivity and employee satisfaction) which were viewed as the business benefits that would be realised. WotF and FutureSpace were refurbished at considerable cost to the organisation, whilst Skillspace was refurbished on a more limited budget. The two sub-cases offered a rare opportunity for further exploration and data gathering for the researcher, and to develop ideas from the main case, the WotF project. Change was vital for both these projects / areas within the organisation. Management were looking for ways to quickly transform the way the teams worked, in order to deliver the organisation’s strategic objectives while simultaneously embracing the espoused new and desired culture changes. It was felt that there needed to be an event to promote or mark the change, and the redesign of the workplace was intended to accomplish this. The two projects called ‘FutureSpace’ and ‘Skillspace’ respectively will be detailed below.

FutureSpace

Prior to the redesign of FutureSpace in 1998, 50 staff were based there, separated into five small teams and mainly from electronics and creative industries backgrounds. There were key factors in support of the change. The working

environment for these teams had been criticised by its industry partners generally, and in particular by the Scottish Electronics Forum (SEF). The SEF represents the major electronics companies in Scotland - e.g. Motorola, IBM, OKI, Sun Microsystems. The major criticism was that the operating environment was not conducive to teams leading in the field of new information technologies. This was due to the office colour scheme being bland shades of green and beige, and the design being one of cellular offices. Customers believed this reflected a very traditional public sector organisation with little space for creative team working, and where the technology was not leading edge - e.g. standard desktop PC's were visible in most of the cellular offices.

Following on from, and in combination with these design and aesthetic factors, the key objectives were established as follows:

- to help the teams based there contribute effectively to the achievement of their strategy, which would require cross-team working;
- to maximise the efficient use of space and information technology;
and,
- to improve the delivery of services to partners and customers.

The workplace was to provide a platform for the display of research, development and design in Scotland. It was to be a dynamic and creative working environment that would build on the lessons learnt from the WotF, and include innovative ways of working.

The teams decanted from the space for the redesign period and then relocated back after the work was completed. The new ways of working were to bring benefits to these teams. In their workspace, before it was redesigned, the teams often reported having to book hotel rooms, in order to have an appropriate place to both meet and to create opportunities for synergy. There was also an expectation that their workspace would be able to accommodate more staff if they were working flexibly, and hence cope with future growth more easily.

The space, before redesign, was in keeping with the normal colours and layout within SE buildings. On removal of office partitions, it looked very bland with the soft colours, as shown in Plate 26 below.

Plate 26: FutureSpace before redesign



Once the bright, bold colour scheme was introduced, it was reported to have a vibrant feel, and was certainly more aesthetically pleasing for the staff working there. Plates 27 and 28 below show some of the colours introduced overall into the workspace.

Plate 27: entrance to FutureSpace



Plate 28: storage area in FutureSpace



The workspace design incorporated most of the aspects of the design of WotF, including sharing of worksettings such as hot desks, carrels, and hot offices. Unlike WotF, no permanent desks were allocated to staff. Examples of hot desks and a touchdown area are shown in Plates 29 and 30 respectively.

Plate 29: hot desk area in FutureSpace



Plate 30: touchdown area in FutureSpace



Unlike WotF, there was little emphasis placed on the softer aspects, such as pot pourri, flowers, or fish tanks. There was a full range of meeting spaces, including formal meeting rooms and informal café spaces, for staff to choose from, all similar in principle to those in WotF.

The cultural changes and reduced visible signs of hierarchy, or status, in the workplace were also part of this project. This was taken to the extreme, and no consideration was given to the business need for individuals to have a permanent desk. There was no consultation with, nor choice for staff to work from a permanent desk. All staff were made compulsory flexible workers, primarily to ensure that everyone had equal opportunity to choose appropriate worksettings. Flexible working policies such as homeworking were incorporated.

Skillspace

The Skillspace project, initiated in 1999, involved the physical redesign of a workspace that was home to 22 people prior to fit out, all part of one team. The stated desire was to change the traditionally designed, cellular workspace into a modern, flexible new work environment like the WotF. The new environment was intended to reflect the changing structure within the team, which was to be a flatter matrix management structure. The objectives of the physical change were as summarised below:

- to support the new cultures and values of the team;
- to encourage behaviours needed to deliver their aims;
- to showcase good practice in knowledge management; and,
- to improve communications and integration within the team.

The office space was similar to WotF and FutureSpace before redesign, with bland corporate colours and individual cellular offices being the dominant worksetting. There were limited opportunities for the team to work together in shared spaces, and a lack of openness in the workplace as a whole. From Plates 31-33 below it can be seen that bold colours were introduced, and a range of worksettings in open and enclosed spaces were available.

Plate 31: informal meeting space in Skillspace



Plate 32: hot offices in Skillspace



The Skillspace redesign embraced all of the new worksetting concepts that WotF and FutureSpace had, again excluding only the permanent desk. The option to be a flexible worker was not voluntary. As this team was externally customer interfacing, management stated that no staff, except administration support, should require a permanent desk within the office. Another exception to this protocol was the director managing the team, who retained ownership of a permanent office, which could be booked by staff when the director was not in.

Plate 33: permanent desk area within Skillspace



There was a great deal of planning and preparation for the move, and consideration was given to how individuals would work. However, the latter focused primarily on the new management structure and how it affected day-to-day operations. There was minimal focus on new ways of working in the redesigned workspace. It was assumed that individuals would work that out for themselves, given the new flatter and empowering structure.

4.3 The WotF Case Study - Presentation of Findings

4.3.1 The early years, 1996-1998, in Workplace of the Future

I was very fortunate to be part of this case study from the outset as one of the early ‘guinea pigs’, willing to be seen as a positive, risk taking individual who was ready to embrace change. Like the other 70 colleagues who were part of this new project, I was asking the question quietly: “what’s in it for me”? The organisation had made clear its goals and anticipated benefits from making this investment in time and money to change the way we work, but the immediate returns to the individual were less uniformly articulated. I was driven by my hunger as a researcher to participate in this project, but as for others, I wasn’t clear what forces were driving them. For some, I wondered, was change alone good enough to bring about a positive enthusiasm?

I was eager to find out if members of the WotF felt their productivity levels had been affected by the move. I was seeking assurance that the positive mood in the workplace, at the surface level, was a true reflection of deeper personal feelings about the change for individuals. Multiple sources of data were used to help clarify this picture. More specifically, the Staff Questionnaire (A2.1) and the Final Evaluation Study (A1.4) were used to provide some insight as to whether or not the WotF had improved perceived levels of productivity, or efficiency of staff. The results are summarised in Table 4.1 below.

Table 4.1

Productivity and efficiency increase %	1997 (A2.1)		1998 (A1.4)	
	% of responses	No. of responses	% of responses	No. of responses
No increase	20%	5	6.5%	2
10%	16%	4	13%	4
20%	16%	4	29%	9
30%	28%	7	32%	10
40%	12%	3	13%	4
50%	8%	2	3.25%	1
>71%	-		3.25%	1
	100%	25	100%	31

From the data shown above, almost 20% of the responses were displaying no positive increase in productivity in 1997, decreasing in number to 6.5% of responses one year later. All other respondents reported an increase in perceived productivity, of 10% or higher. Therefore, overall, 80% in 1997, and 93.5% in 1998, felt more efficient and productive as a result of their move to the WotF. As a realist researcher, I was less concerned about the scientific variance between the years, but more interested in the overall results displaying a positive shift, confirming the mood that I could sense from the majority of staff in WotF that I observed on a daily basis. As this was a self-reporting exercise of productivity levels by the individual, there was an overall sense of their perceptions being that they were able to do more as a result of their move to WotF.

There was no investigation, or formal record available, to confirm actual output level changes of the staff in WotF. SE's organisation performance management system is designed to measure staff's performance on set targets and key results achieved.

This means that managers are encouraged to focus on the outputs of their staff, and not on the inputs such as length of time they are present in the office, or 'on-line' at

home. There was no system in place to relate the self-reported findings from staff to their actual performance documentation.

The Chief Executive, at that time, held views on how the new work environment could contribute to the productivity and capability of the organisation. In an interview undertaken as part of the second evaluation of WotF (A1.3) he said:

The SE Network must continue to build its capability to provide 'customised customer responsiveness, I mean - to respond quickly to each customer's exact needs. This requires the effective sharing of information and knowledge and the ability to communicate from any location" (Crawford Beveridge).

It was noted from this interview statement that there was an expectation on employees to be available out with the traditional 35 hour week of Monday - Friday, 9-5.

There was an indication that some of the productivity gains had been achieved by staff working longer hours as they were able to do from a variety of locations with the use of mobile technology. In an interview with Alistair Wilson (A1.3) he discussed how he had experimented with flexible working to go on tour with his wife who was a musician, working in different parts of the country. Although he had valued the opportunity to do so, he said:

WotF has given me permission to try out the most flexible patterns of working. But after a period of trying, I have reverted back to a more traditional, WotF based, workpattern of 9-5. This has reduced my stress that was generated by working long hours - a danger for remote workers (Alistair Wilson).

Blair Armstrong was an experienced flexible worker who had been working from home for many years prior to the formal establishment of WotF. He recalls that when he started to work remotely, he remembers the personal changes he had to make to come to terms with flexible working and referred to them as 'dramatic'. It took him at least two months to get "new working patterns sorted out". In discussing his personal experiences of flexible working in interview for the second evaluation of WotF (A1.3) he said:

Like many home-based workers, I am often tempted to work longer hours at evenings and weekends. This means that the organisation gains in terms of increased outputs, and also because the homeworker meets the heating and lighting costs, but this, I feel, is a fair trade for the benefits of flexible working (Blair Armstrong).

In an interview in the final evaluation of WotF (A1.4), Jonathan Star was another staff member who talked about his experience of trying out flexible workpatterns outwith the WotF environment. He had taken the opportunity to have a laptop computer to enable him to work from home. He had tried this for a period of around

7 months during which time he said his stress levels increased due to the longer hours and break down of distinction between home and work boundaries. At the interview he said:

I do not work much at home anymore, I don't want to get sucked back into the long hours again...and there is also the discomfort of packing your bags every night (Jonathan Star).

From the interventions with staff and personal experiences I had obtained myself in new ways of working it was apparent that there was an element of personal organisation required for planning effective work outwith the office. Work tools such as files were required when not in the office, as the organisation was not yet a paperless office, and hence carrying files and equipment became a normal occurrence for flexible workers.

In the final evaluation interviews (A1.4) Bob Adams also talked of these more personally difficult aspects of flexible working:

There is no clear division now between my home and work. I have higher expectations of work volumes - spread over longer hours (Bob Adams).

Despite these seemingly negative aspects of new ways of working which the WotF had gone some way towards formalising within the organisation, only one staff member, Jonathan Star retracted from the ability to work remotely. The other

interviewees appeared to accept these downsides as reasonable trade for the perceived benefits they received. Additional data shown below begins to highlight what these other perceived benefits are that staff value from the move to the WotF.

In the First Evaluation of WotF (A1.2), data gathered from individuals' personal project records provided further insight. Two extracts from the full transcripts (A1.2) are presented below. These extracts place emphasis on the positive aspects of the move to WotF, being about flexible work patterns and individual control over the management of work and life balances:

I enjoy the 'freedom with focus' ethos of the New Ventures team. They have a very clear idea of what is expected of them. Their business plan targets and priorities are agreed at an annual network conference, but they have the freedom to work towards them. The team believe that they work longer and harder than they would in a traditionally supervised environment, precisely because they are trusted to get on with things and to deliver results (Alexis Henderson).

Two of the most important issues in WotF, increased productivity through flexible working and increased creativity through making more connections, are more influenced by management style and personal responsibility than by the physical environment (Alistair Wilson).

Both of the extracts allude to the importance of factors other than the physical design as being effective in the pursuit of increased positive productivity and staff involvement.

In addition to the two questionnaire results shown in Table 4.1 and to the extracts above, there was further supporting data gathered via focus groups in the Final Evaluation (A1.4) regarding productivity changes. The five individual supporting extracts from the reports of focus groups are shown below:

Changes in productivity: new ways of working

The WotF project has allowed more staff to be accommodated within a smaller office space, giving significant cost savings which will be referred to in the quantitative evaluation. Focus group participants who work flexibly continue to suggest that further productivity gains are made from savings in travel time, from the ability to choose the appropriate location for the job, and from reduced interruptions. Many also work longer hours, or spread their hours over more of the day e.g. from early morning until late evening.

All those who work flexibly (and even those who simply observe the clean desk policy) have become more disciplined and focused in their approach. This is an area where individual discomfort may be greatest during the transition to new ways of working; participants will only persevere where they begin to see personal benefits (or where external factors such as team

norms are important). Everyone interviewed valued the opportunity to take full responsibility for their own outputs.

Participants spoke of reduced stress, the opportunity to spend more time with family members, and a better fit between domestic and working life.

There was a strong contention among group participants that new ways of working must also apply to support staff. The advent of Voicemail, and a growing tendency to communicate via e-mail rather than letters or memos, has dramatically altered the role of team secretaries. The New Ventures team policy decision, to make executives responsible for additional administrative tasks such as arranging travel and booking meeting rooms, has resulted in a 40% reduction in the administrator's hours. One of the New Ventures team administrators chooses to work from a permanent desk in WotF; the other, whose work is now project-based, has a laptop which allows her to work from any location in WotF. She also works from home 2-3 days per month.

Changes in productivity: WotF Environment

The WotF environment focuses on productivity by allowing participants to choose the right space for the job. The workplace offers quiet areas for contemplative work, access to SE systems and the internet/intranet, and the opportunity to meet people from other teams. Some flexible participants are

choosing to spend more time in WotF. They still enjoy the busy, buzzy atmosphere but find that, in general, things are a little quieter.

From the combination of the data illustrated in Table 4.1 (p.170), my workplace observations, and the above review of particular elements of the 3rd party transcripts, there was substantial data to confirm that the staff's perceptions were that the move to the WotF had increased their productivity levels overall. Those working flexibly reported that productivity gains were made from savings in travel time, from the ability to choose the appropriate location for the job, and from reduced interruptions and increased concentration. Staff reported working longer hours, or spreading their hours over more of the day. This trade off, for the majority, appeared to be an acceptable one for the benefits that the new work environment brought overall. The ability to have more control over their work life balance and choice of workplace was also a dominant aspect. There was mention of the efficiencies that were achieved by the move for the organisation, such as rationalisation of equipment and worksettings, and an overall reduction in floorspace occupied. However, these were not cynically discussed, and there was no feeling that these or other cost related pressures were the key reasons for the change. In an interview with Bob Adams in the final evaluation (A1.4) in discussing the opportunities for commercial organisations to achieve business development benefits from changing their work environment. He said:

Occupancy shows that considerable costs savings can be made, no commercial organisation could ignore this opportunity (Bob Adams).

Bob's position within the organisation was Director of Business Development and New Ventures, it seemed he was considering not only the experience as it was affecting him personally, but also in the context of his role with Scottish Businesses, providing a broader consideration of the overall changes.

I considered that people are often happy to move forward, if what they are leaving behind is not desirable. However, for some in this case, what they were moving from was very comfortable, and indeed had taken many years for individuals to build. Status symbols and objects of hierarchy were inherent within the organisation. The structure of the building aided the reinforcement of both the former, and the latter, with its design being predominantly pockets of extreme open plan for routinised operations, such as financial transacting; or, for support staff who would often be sitting outside their managers' offices waiting to be summoned.

The open plan was fenced with rows of cellular offices for management. You did not have to be very senior to have an office; many junior management positions came with an office, and if by chance you could find one that was empty, you could move in and claim ownership. This was a display of the reactive facilities management strategy in operation, and the traditional public sector system for space allocation typically based on hierarchy. The facilities team would hear about an office move after it had happened - most frequently to sort out problems that inexperienced staff had created whilst doing things they should not be doing, like moving furniture.

I suspected the feelings of loss of status were there, but were not being openly discussed given that the tenor of the project appeared to require being seen as a positive participant embracing the new ways. Perhaps people were not brave enough to say publicly that they enjoyed the status symbols that they had become familiar with over the years. There were, however, many reportings from staff in my daily discussions (A4, observer role) that they were keen to leave behind their shabby, tired workspaces and old furniture. There was also some recognition that moving the teams out of their offices, to co-locate in a new work environment, could allow better integration amongst the teams. Evelyn McCann, who was interviewed as a non-participant in the WotF as part of the second evaluation (A1.3) said:

I believe I have seen connections across teams in action on my visits to WotF - this breaking down of barriers across teams compensates for the email culture (Evelyn McCann).

In support of this view, other members of staff said in the questionnaire (A2.1):

The general environment of WotF is better for making connections, inter-team working, and easy solutions. Quick, easy solutions to issues by a brief chat rather than organised meetings as before. More open and more dynamic (Marion Francis).

Better team communications are taking place with those involved in WotF, and more effective meetings (Eleanor Taylor).

However, it was put forth that just being co-located is arguably not enough to ensure these cross team connections take place. Staff discussed how it required more than co-location alone:

The working environment can only enable connections to be made, it is up to the individuals to make those connections. We must also consider that where individuals are completely focused on what they have to do they are unlikely to interact with others and resent interruptions (Shona Cormack, A1.3 interview).

I think the reality in WotF is that most people don't really regularly share ideas and information across teams, a function of being too busy and also perhaps through individuals' natural reclusiveness which comes through not having your own space. We need therefore to find new, different ways of enabling the sharing process (Neil Ferguson, A3.2, email)

It was recognised that, if nothing else, participation in the project had presented an opportunity to see what was really going on in the organisation. Although it was acknowledged that it would take additional work to move beyond the opportunities created by physical co-location.

Given that the focus of the organisation's strategy was on knowledge sharing and developing cross team working, no one could argue with any conviction but that change was long overdue. The seven floors in the main building were accessed by

enclosed lifts and staff could come into the building every day and go straight to their office without having to pass through open areas, or interact with other members of staff.

The staff who moved to the WotF were very visible to each other, which signified a substantial change in the culture that had been dominant within the organisation. In an interview undertaken as part of the evaluation update report (A1.6) Charlie Woods was discussing the fact that he wanted to give up his permanent desk in WotF as he believed he was only ever at it around thirty percent of his time. Other times he was out of the office with customers or in meetings elsewhere in the building. He talked of the importance of accessibility to him for his team and simultaneously recognising the inefficiency of having a permanent desk that would be empty much of the time. Charlie said:

If I am here, people can talk to me; if I'm not, I'm wasting space (Charlie Woods).

Reduction of hierarchy, and sharing of rationalised facilities, was contrary to the typical workplace practices that had prevailed for many years. Charlie appeared to have developed a sense of awareness of his use of worksettings. This was not common within the organisation, historically, to think of dedicated 'ownership' of space or items as an inefficient use of resources.

Not all staff based in the WotF extended their flexible workpatterns beyond the office. For some homeworking was not an option, as discussed by staff in interviews conducted for the evaluations (A1.3 and A1.6) of WotF:

I do not choose to work from home. This would disrupt my care arrangements for my children and take away the social aspects of coming to work, which I enjoy (Claire Williams, A1.3).

I enjoy working in the busy, bright, WotF environment and have become expert at getting on with the job despite any noise or disruption (Margaret Hirst, A1.3, interview).

I am more comfortable now with flexible working and the personal changes that are required. I prefer to use a variety of worksettings within WotF rather than be at home as there are too many distractions at home. There is still a lot of discipline and organisation required - like, in booking desks (Margaret Baird, A1.6, interview).

Hot desking is good since it allows you to move around and interact with different people, and good for me because the clear desk policy keeps me disciplined (Brian McLaren, A3.2, email)

It is becoming apparent that staff are aware that flexible working, either remotely or within WotF requires an element of personal organisation and co-ordination. In an interview with Gail Rodgers in the second evaluation of WotF she talked of this:

I would hate to return to a traditional environment where flexibility was not an option. However, I have not achieved my target of working from home at least one day per week, because preparing to spend a day working from home requires considerable organisation. It is easier, and perfectly possible, to find a quiet spot in WotF.

Although Gail values the opportunity to choose to work remotely, she also recognised that it requires personal effort. It is not an automatic transition once the decision is made, remote working in this formalised system appears to hold an element of considerably re-establishing work routines.

In the questionnaire (A2.1, question 6.2), staff were asked about difficulties with the move to WotF. As shown in the results below, they appeared to have met little difficulty in changing to the new work environment.

Looking back at your move to WotF what, if any, were initially negative aspects?

Table 4.2

	No. of responses	% of responses
Lack of space – working area and storage	7	29
Difficulty with settling into new work environment	5	21
IT/ technology	5	21
Loss of basic familiar environment	3	13
Loss of status symbol	1	4
Social contact	1	4
Team communications breakdown	1	4
Others' negativity	1	4
<i>Total responses</i>	<i>24</i>	<i>100</i>

From the data presented above, there was no evidence to support my suspicions that staff would find the cultural changes and eradication of status symbols difficult to adjust to; only one respondent reported this. However, the generic answer that said 'difficulty with settling into new work environment' may be an indication that the cultural and status changes were difficult. It may have been that staff were experiencing a period of adjustment and establishment of new routines. The data captured in an interview during the second evaluation (A1.3) would support this suggestion:

I have been working in this way for about a year now. Most people have settled now into a pattern of working which suits them. Choosing, where they have flexibility, the workspace which best fits their task (Lesley Barclay).

Another member staff talked about her promotion to a new team in another part of the organisation. She was moving back to an office of her own within a traditional workspace:

I fear, when I move, I will be tempted to pile up journals again until I can find time to read them properly - this will slow down the circulation of information. I had learned to pass these on quickly because of my flexible working and the clean desk policy (Marion Francis).

It seemed that staff recognised a period of change that they had managed themselves through, and once established, brought improvements in their work processes. This notion would need further exploration, and additional data to be gathered, before any assumptions could be.

Views were expressed that the project had been too design driven, with high stools that looked good but were not functionally ideal to work from. Meeting room tables were too small to hold papers and were also too expensive.

In the second evaluation (A1.3) Charlie Woods discussed his views on the limitations of the workplace design. He said:

The WotF design is not ideal but teams have made it work. Overall, the environment has a positive effect on mood and output and people enjoy coming to work (Charlie Woods).

Despite the negative statements towards some aspects of the physical environment, staff were still resounding the strong positive message about being proud to be part of the WotF, and a high tolerance level of these negative aspects prevailed.

In an email to myself discussing aspects of the WotF (A3.2) one member of staff said:

On the whole, however, my view is that the positive benefits of a WotF-style environment outweigh the negative aspects (Gail Honeyman).

From the transcript of the 3rd party consultants reports for the Summary of Evaluations between 1996-1999 (A1.5), the influence of being part of something special or different seemed to have an effect on the mood of the staff based there.

The consultant noted:

There can be no doubt the WotF high profile organisation sponsorship and the internal and external publicity which the project received supported participants sustained experimentation in new ways of working. However, the strongest dynamic of the project was their strong, shared commitment to making the project a success. Not everyone was a willing volunteer but once a team signed up, its members gave a unanimously positive public response (Hawthorn Consultant)

I wondered if the project could have achieved its aims more cost-effectively, and perhaps with less emphasis placed on the physical design, and felt that perhaps a more modest design approach may have facilitated the same positive result?

In an attempt to uncover the salient factors contributing to the positive mood of the staff in the change process, I used four key themes which had been identified in the literature review. These four themes that merited further exploration were: informal organisation structures, leadership, empowerment and buy-in from staff, and bureaucratic dichotomies. There are recognised overlaps and synergies across the four themes, but each will be discussed separately below.

Informal Organisation Structures

As discussed in the literature, the Hawthorne experiments generated new ideas about the importance of the social group in the workplace (Pennock, 1930; Sundstrom, 1986; Baldry, Bain and Taylor, 1998). The human relations approach recognised (and still recognises) the importance of the informal organisation which, it is claimed, will always be present within a formal structure. It is claimed that this informal organisation will influence the productivity, motivation, values and attitudes of workers (Gillespie, 1991).

In focus group interviews that were held with staff in the Benchmark Evaluation Study (A1.1) the consultant facilitating reported that there was '*an overwhelming*

enthusiasm for the WotF to be a success amongst participants'. The participants stated that they were willing to overcome initial teething problems and to take personal responsibility for making the project work. I had assumed that some form of personal willingness and support was given by the individuals to the project. I wanted to test this further, as I wondered to what degree peer pressure and informal structures were at play within this focus group, and, whether or not people were being honest when saying they wanted change of this nature. I suspected there may have been discomfort for some with respect to voicing a personal opinion which did not conform to the group's prevailing mood.

The group-think hypothesis (Janis, 1982, p.7) suggests that: "...members tend to evolve informal norms to preserve friendly intra group relations and these become part of the hidden agenda..." It is suggested in literature discussions (Janis, 1982, van der Heijden et al, 2002) that 'group-think' often occurs in organisations where the hidden agendas of individuals concerned about receiving colleagues approval leads to a: "...convergence of vocalised opinion" (van der Heijden et al, 2002, p.73).

I explored the suspicion I held that 'group-think' (Janis, 1982, van der Heijden et al, 2002), peer group pressure and/or support may have influenced the data gathered in the case study using firstly, data gathered in the questionnaire (A2.1, question 7.4).

How would you rate the workplace of the future as an environment that generates peer group support?

Table 4.3

	Better than previous office		Same as Previous office		Less effective than previous office	
	% of responses	No. of responses	% of responses	No. of responses	% of responses	No. of responses
Peer Group Support	66%	19	20%	6	14%	4

It can be seen from this data that peer group support was certainly active, with 86% of responses confirming it was either the same or more than in their previous office.

In the first evaluation (A1.2, p.6) there was reference to the confirmed importance of the positive attitude towards the change success. It was reported that people felt they *“were in it together and it’s there for us to shape”*. This continued to demonstrate the presence of concurrence seeking tendencies, group influence and informal structures.

In the Second Evaluation (A1.3) of the WotF one member of staff in WotF said:

the juxtaposition of different functional teams is crucial to the success of the workplace of the future and people must take the time to invest in the social capital of the organisation by talking to each other. It is the teams that have made the Workplace of the Future work, perhaps less so the design (Charlie Woods).

In the first evaluation of WotF (A1.2) Eamonn Kelly discusses the notion of an individualistic culture emerging. Not driven solely by WotF but by the changing pattern of work and onset of the knowledge economy. He recognises these symptoms within his own team stating:

I can see there is an individual responsibility but with a common purpose
(Eamonn Kelly).

It appeared that Eamonn believed even although his staff were working on their own portfolio of activities, they were sharing common purpose. There did appear to be a sense of comradeship amongst the staff based there. In an interview with another member of staff, this feeling of shared or common purpose towards the WotF was apparent:

People see the WotF as an environment that they have helped to create - with much more meaning than just somewhere to work (Marion Francis).

This is a clear demonstration of the support and common purpose within a team; the informal structures that are not intentionally planned into the design, yet are shown as powerful influences, and perhaps linked to the role of a leader which will be discussed next.

Leadership

According to Appelbaum et al (1998), courageous and decisive leadership can help an organisation to overcome difficult situations or take quick action. It is suggested that leaders have roles to play in developing enabling structures and reinforcing change (Kanter et al, 1992, Hitt et al, 1996).

From the analysis of the data, leadership was flagged up as crucial in the early stages of the transition to a new work environment. In the WotF there were two senior directors, both of whom joined their teams in the move to the space. In an interview undertaken in the Second Evaluation (A1.3) of the WotF the following was said:

the space is far from perfect, but I moved there to send the right messages to my team as a new team leader, instead of choosing the alternative option open to me, of a traditional office away from my team (Charlie Woods).

This was a clear demonstration of his realisation of the importance of being amongst his team, whom he was expecting to undertake this change. In the Final Evaluation (A1.4), Charlie Woods goes on to say that:

the Workplace of the Future is an important exemplar for flexible working practices in SE and a demonstration of trust in each individual's ability to deliver the organisation's goals – at whatever time from whatever location. The Workplace of the Future environment facilitates new ways of working,

but management style remains the most important factor in encouraging and enabling individuals to make their maximum contribution (Charlie Woods).

Additional data was gathered around this strong view of the importance of leadership and management in the Final Evaluation (A1.4) of WotF, with a member of staff saying:

there is a general move away from team building and management of people and resources; and a very strong move towards empowerment, bottom up planning and individual working. Considerable work needs to be done on leadership implications (anonymous).

On first reviewing this data, I pondered whether it was contrary to what had gone before regarding the role of a leader, and perhaps this was just an opportunity for some managers to opt out of leadership responsibilities by advocating empowerment from the bottom up. However, on further reflection, the data supports the message that the leadership is crucial, but more importantly, what it begins to indicate is that the leadership required in a new work environment is different to that of old.

To assist with clarity on this, I drew upon data from the questionnaire (A2.1, question 6.5) issued to staff in WotF. Staff were asked if they felt managers required additional skills to manage flexible workers. 83% of responders said yes, and 17% did not think additional skills were required. When asked further;

What do you feel these additional skills are?

Table 4.4

Heightened communication skills	48%
Heightened team building skills	38%
Ability to set tight performance targets	5%
Trust	5%
Heightened motivation/leadership skills	2%
Increased comfort with team when not visible	2%

The two dominant skills identified were around teambuilding and communications. I was expecting more emphasis on motivation/leadership but from the data it can be seen staff do not view this as the role of management as much as the other data suggested. One member of staff noted their difficulty in answering this question about the additional skills that managers need for a new work environment. He provided some additional information which said:

I find this difficult to answer as it has more to do with other factors than the WotF. WotF is only a location. Management need to trust (Ewan Mearns).

Perhaps this was in keeping with 'bottom up' management styles and empowerment. This raises a contradiction with the literature (Agryis, 1957; Vroom, 1960; Likert, 1961; Peters and Waterman, 1982; Mullins, 1983; Kanter, 1989) which emphasises the importance of motivational and leadership skills for staff, and yet the data in this questionnaire is not echoing the message. Additional sources of data will be used to explore and discuss this incongruity further. Concern is given to the wording of the question, as staff may have made assumptions about the basic skills of their

managers which they have taken for granted. This could have influenced their interpretation of 'additional' skills.

It is not known from the data whether motivation and leadership skills are assumed as present from the outset, and hence negating the need for them to be heightened.

There was limited contrary data to the belief that managers have the key role to play in the move to a successful new work environment. Only two such examples could be identified in the Final Evaluation (A1.4) of WotF. Staff in interviews said:

I think the environment does it without the managers having to (anonymous).

Another member of staff in an interview undertaken in the Final Evaluation (A1.4) supported this when saying:

the Workplace of the Future environment is more interesting and energising than anything else that exists in SE currently, and it is difficult to change the way people work without such a fundamental change of environment. This kind of environment is in itself a catalyst for change: a physical manifestation that the organisation is interested in ambiguity (Alistair Wilson).

In WotF, the two senior directors leading the teams displayed their commitment to the project from the outset. One worked from a small desk right in the heart of his team space and could often be seen booking a hot office to make confidential or

private calls, or to host one of his many meetings. He made deliberate efforts to demonstrate to his team that he was 'in it with them', and often his team could be heard saying "*if the senior director can do it we can*". This team tended to base themselves close-by the director, enjoying the opportunity for discussions and exposure that this workstyle offered. In an interview undertaken in the final evaluation (A1.4) a member of the team said:

I believe that a Director who is located with his team has a much clearer understanding of what the team does and what individual team members bring. More relaxed and honest communication becomes possible in this open environment, while flexible working practices demand a greater deal of trust and therefore make team members feel more valued and empowered (Gail Rogers).

The second senior director choose to increase his mobility outwardly from the office, and viewed his home as the base from which he would leave to attend meetings in the office, or at clients' premises. It was very noticeable that the majority of his team started to pursue a similar workpattern and based themselves at home, using the office to support them when in for meetings and to collect mail etc. He could often be heard challenging traditional work patterns in the workplace by asking his team members: "*What are you doing in the office today? I thought you would be at home getting some real work done*".

Commenting on the required management style that leaders should adopt, a member of staff said in an interview conducted during the final evaluation (A1.4)

Within WotF, people have been given the permission to work differently and have responded positively to the challenge of greater self-management. For the benefits of this change to be fully realised, managers must adopt a much more facilitative management style (Claire Williams).

Leadership has been very supportive in providing guidance and demonstrating by example in the change process within WotF. I am left curious at this stage about the individual benefits achieved, and hopeful that the concept of 'buy-in' offered in the literature and data will help clarify why staff are influenced by the leadership and management style.

Empowerment and "Buy-in" from Staff

Management researcher Douglas McGregor focused on assumptions made by managers about which factors were most important in motivating people at work. McGregor (1987) states there is a direct link between management expectations and employee performance, i.e. management who have positive expectations and involve their employees in workplace decisions will in turn receive a greater performance from the workforce. This is supportive of the new management thinking of

employee inclusion and participative management writers (Kanter, 1989; Drucker, 1993; Handy, 1995).

In an attempt to discover if staff felt they had input into, or participation in changes and decision making, one section of the questionnaire was designed around the consultation process of the change. The questionnaire (A2.1, question 4.1) asked staff about their levels of involvement and the results are shown below:

How involved were you in the decision making process leading to the WotF?

Table 4.5

	% of responses
Not at all	24%
Minimally	12%
Moderately	20%
Considerably	20%
Fully involved	24%

Overall this indicated that 64% of staff felt moderately to fully involved in the decision making process prior to the move. Building on this, data gathered in the questionnaire (A2.1, question 4.3) and shown below provides further clarity.

To what extent do you feel that ideas you suggest for improvement are considered?

Table 4.6

	% of responses
Not at all	3%
Minimally	-
Moderately	19%
Considerably	48%
Fully	30%

This indicated that 97% of responders felt able to influence changes to varying extents, with only 3% feeling they were not able to have their ideas considered at all. Data gathered in the questionnaire (A2.1, question 4.2) and presented below provides an insight into the feelings of staff about the ability to influence the project.

Was any feedback sought from you in the project about your level of satisfaction with the new situation?

Table 4.7

	% of responses
Yes	89%
No	11%

From this data, there appeared to be a sense of opportunity for people to influence or contribute to the changes in the project. It is difficult to presume this played any positive driving force in motivating or engaging buy in from staff.

At this stage in reviewing the data, I am drifting to my observations of others and my recollection of what a day in the workspace felt like. What opportunities did staff really have to say how they felt and were they able to feed these into the process? There was the 'ideas' white board which seemed to serve a dual role in the workplace: first as a vehicle for anonymous commentary with respect to any negative aspects and, secondly, as a conduit for the public ridicule of co-workers. To staff it was both a symbol of co-operation between participants and management, and of 'dinosaurs' who feared change. The latter centred on the genuine fear of change which some people experienced. The ridicule was apparent from members who were comfortable with change as they displayed a non-tolerance towards staff

inexperienced in flexible working. However, there was a guarantee that serious commentary would be reviewed and actioned regularly, and through time the ridiculing ceased. Within 18 months the ideas white board was rarely used by staff.

In research undertaken by Beech (1998) and Beech et al (1998), a similar scenario arose, when the organisation he was researching introduced white boards in an attempt to increase both official and unofficial communications between workers. In his work Beech (1998) found that the white board in the department he was conducting his research within became known as the 'humiliation board'. This was due mainly to it being used by some to ridicule or humiliate others. It was viewed by staff as an instrument of control, and this resulted in staff avoiding the use of the white board altogether.

Although there were attempts and genuine efforts to involve staff in certain aspects of the WotF project, there were also many decisions and protocols designed into the WotF that involved no staff consultation, for example, the space planning exercise and clear desk policy. Most attempts were made at involving staff post occupancy, hence a set of 'givens' were prevalent about how the WotF would function from the outset. It was merely the perception of staff that they were involved. This data infers that what has been discussed in the literature review as bureaucratic dichotomies were at play (Cairns, 2002). That is, the espoused intentions of management were not synchronised with their actions.

Bureaucratic Dichotomies

In my search for a deeper understanding of the variables at play, Cairns (2002) offers valuable insight into the complexity of inclusion and empowerment in his research undertaken at an organisation that was trying to eradicate hierarchy, reduce status symbols and empower staff. The organisation was using the physical space to aid change and implement new ways of working through a redesign programme. The process itself involved more senior level staff in making decisions and therefore by default excluding the end user (operational staff) from the decision making and input stages. This was not intentional from senior management, but merely viewed by them as a process that couldn't possibly involve everyone. The organisation was trying to be more inclusive and empowering as its end goal, yet the messages and signals being sent to staff along the way were of hierarchical input and bureaucratic processes.

Vischer (1999) cites David Lathrop of Steelcase North America in support of the parallel dichotomy identified by Cairns (2002), where the intentions and actions are unsynchronised. Lathrop criticises the "told" model – which relates to the process identified by Cairns (2002) – for introducing workspace change programmes. Once again the intentions of management were to increase empowerment and improve workspace design, but the process used was bureaucratic.

In the WotF, the initial process of change was of this bureaucratic nature. As briefly mentioned in the discussion of consultation and involvement of staff above, there

was zero staff involvement in the design phase. In the WotF, input and involvement from staff was not active until after the move was completed. From that point onwards, there was the feeling of involvement and consultation as demonstrated in Table 4.6 where 97% felt able to influence changes to varying extents within WotF.

The two directors responsible for the teams based there were fully engaged with staff in the process of change, and working in the space amongst them. Through the data gathered over the years, there is evidence to suggest that the leaders gained credibility and respect amongst staff based there. In this instance, the lack of involvement at the design phase appears to have had no negative impact on the WotF project, and was never reported by staff as an opportunity they lost out on. There were frequent opportunities for staff to relay concerns about their involvement at design stage, both the questionnaire and the interviews undertaken in the formal evaluation would have been appropriate channels. In addition, the 'ideas board' offered a discrete opportunity for this concern to be raised. This is contrary to the notion offered by Robertson (2000) that it is key to success to involve staff at this early stage.

Reflecting upon the four key themes, that clearly overlap in discussion, and hence demonstrate their relationships and linkages with each, one very strong message emerged. This is explained using data drawn from a quotation in the Final Evaluation (A1.4) of WotF:

Attitude is everything: layout, technology and any other aids themselves are irrelevant if there is no flexibility inside your head (anonymous).

Despite the organisation's resource commitment, which was focused on redesigning the physical environment, there were other factors that appeared more able to influence the success of change in the new work environment arising from the data. On filtering these, I identified them as; peer pressure, empowerment, attitude, and management/leadership. Once again, I questioned whether the same positive effect could be achieved by doing less with the physical design? However, care must be taken to balance the scales, because clearly the data was suggesting that the physical environment was still a contributor. In discussing space, Soja (1989) argues for a multi-dimensional approach, that would simultaneously focus on both the immediate surface appearance and the immaterial reflexive thought that lies behind it. This, he argues, provides a richer interpretation of organisation space. Such boundaries can mean more than simple demarcation. As well as constituting a difference, they can also mark a relation that joins the formal and informal organising of social life, such as home, family, work or leisure (Weiskopf, 2000).

I was searching for some further understanding about what was really driving people to 'play the game' and positively support the project, and I wasn't satisfied that any of the data gathered had really answered this yet. Perhaps there was no answer and, as the data confirmed, this was a complex phenomena, and perhaps the ambiguity should be respected and allowed to flourish. This would run parallel with the research philosophy on allowing diversity and multiple perceptions to exist.

In an interview discussion with a member of staff who was not based within the WotF there appeared to be an awareness that multiple views on the new work environment, WotF were held by others:

Few people outwith WotF have any real idea of what it means to work there
(Bob Downes).

A member of staff who was based within the space said in an interview conducted in the questionnaire (A1.2):

People hold many perceptions of what it must be like. The reality is very different (Eleanor Taylor).

We often try to stifle real experiences by moulding them into categories and pockets that 'feel right' or help us to understand, but perhaps the organisation's system was beyond human comprehension. I am very conscious of the challenge I have ahead, to uphold both the true picture of complexity and, simultaneously, to increase understanding.

4.3.2 The Latter Years, 1998-2000, in Workplace of the Future

Having analysed the early driving forces and motives of the case study, and having discussed some of the key issues emerging from the data covering the early years (1996 – 1998), I would now like to move to discuss some changes in the latter years of the project. I believe these changes significantly challenged what had been the norm in the workspace until that point.

In 1998, a team of 17 people moved into the WotF; namely, the Planning and Evaluation team. Their intention was to create a new image for themselves within the organisation. Their perception was that the organisation viewed them as a ‘back office’ support team, distanced from the other teams in the organisation. There was no evidence to base this view upon, it was merely a feeling held by the team. The team, led by two directors, was working on changes in their work processes, and one of the directors said:

the move to the WotF will be used as a vehicle to aid and support further change in the work practices that we have already been moving towards (Sue Baldwin).

Focus group interviews were undertaken with 15 members of this group (A1.6) in 1999, one year after their move into WotF. An insight from data gathered in the Planning and Evaluation team focus groups is shown in the Table 4.8 below, with data from the findings of the original residents in the WotF also illustrated to provide comparison.

Table 4.8

	Original residents % of responses	Planning & Evaluation % of responses		Original residents % of responses	Planning & Evaluation % of responses
I enjoy being part of WotF	100%	92%	I do not enjoy being part of WotF	0	8%
I am working in a significantly different way	95%	100%	My work practices have not changed at all	5%	0
New ways of working are making me much more productive	100%	54%	I am less productive	0	46%
WotF environment helps me to be much more productive	95%	54%	WotF environment makes me less productive	5%	46%
I am much more creative	100%	70%	I am less creative	0	30%
Customers are receiving better service	72%	77%	Customers have lots of problems	28%	23%
My team works better in WotF	78%	23%	My team has more problems in WotF	22%	77%
Technology supports my work very well	89%	77%	Technology does not support my work well	11%	23%

Source : constructed from data collected in A1.2 and A1.6 focus group summaries.

As shown above, overall, the responses of the Planning and Evaluation team were less positive than those of the original participants of WotF.

The original teams that moved together into WotF in 1996 exhibited strong shared ownership of contributing to the success of the project, as discussed previously. By the time Planning and Evaluation came to join WotF in 1999, the environment was more mature. At the same time that Planning and Evaluation were settling into the workspace, two directors left the team. One was seconded to the Scottish Executive, and the other took up employment in another part of the organisation, to lead a new team he was working with. This meant that the team had no management at the time

of settlement who were 'in it with them', and members of the team reported they felt abandoned. They also talked of depending upon each other to get them through this period of change.

It was apparent that this left the staff within the team feeling vulnerable at a crucial point in their move to the new workplace. It is possible to consider that the experience was made even more difficult for the team as they had not expected it or prepared for the lack of management support. Just two weeks before the move, one of the two directors of the Planning and Evaluation team had emailed all their staff and other management within WotF about matters relating to the move:

We are really keen in P&E to join our colleagues in the WotF. We want to see WotF work - we're all for it (Sue Baldwin).

There was no indication that neither of the managers intended to go through with the move.

Planning and Evaluation felt different to the teams already based in WotF whom, they felt, were more mature in both their understanding and practical usage of the new work environment. It was approximately six weeks before new management was recruited for the team.

Unlike the original teams based within WotF, there were no positive feelings about the benefits for the team since the move. In emails (A3.2) discussing the WotF staff

from Planning and Evaluation were suggesting that the move had been to the detriment of their team communications:

I do feel that communication within my own team has not been as easy to achieve within WotF and mixing teams together in itself has not led to sharing of information and ideas (Dawn Mackinnon).

I feel that we have lost part of the team spirit that we had in P&E when we were situated on the 1st floor. The work our team is doing at present benefits from us being able to communicate and I feel that when I talk to my colleagues I'm disturbing others who are trying to concentrate on what they are doing. Personally, I do not particularly like working in WotF (Eleanor McCallum).

The Planning and Evaluation team did not like their former work environment. The opportunity to upgrade their surroundings was given significant weight in their decision to move to WotF. The majority of the team also said, when asked, they would prefer to stay in WotF and had no wish to return to the old environment, despite reporting the WotF as having negative effects upon them. An example of a negative report from this team was that the office was too noisy for contemplative, or concentrated work. Taken at face value, this was quite alarming, to hear for the first time, three years into the life of the WotF project.

How could the design of the space that had been accommodating such concentrated work for the other teams during the past three years not extend to serve this team?

Had the others just been too polite to mention it? Had they been afraid of talking 'negatively' about these aspects of the space, or did the new team have such radically different work patterns that their worksetting needs were different and unsupported in WotF?

On further exploration of this matter, I discovered one very interesting and underestimated situation, where the physical design was the 'easy' target of poor management in other activities. To explain further, I will start with the manifestation of the problem. The workplace design was stated to be inappropriate for this new team to work quietly in, due to the noise and distractions in the office. In discussion with the team and the concierge managing the space, I questioned why these people did not use the private worksettings designed for these quiet activities, such as hot offices or carrels. I was informed that the team did. Further confused, I engaged in conversation with some of the team members, which soon unearthed the real tensions within the team. Many of the team members had expressed a desire to work from home, which had become a typical routine way of working for the majority of the original residents based in the WotF. The new managers of the Planning and Evaluation team had been verbally supportive of this new way of working for the team and, in principle, agreed to it becoming an integral part of their workpatterns. However, the team had limited technology to allow them to work effectively from home locations.

In discussion with the team manager, I probed to find out what the barriers were to providing this technology? Was it financial? Was he aware of the need? Had he any

plans for resolving the matter. I was informed that it was a financial constraint. As the project manager of WotF, I assisted in the sourcing of funds to allow this team to gain better support from the office design, which extended to embracing homeworking as part of its effectiveness and range of work choices.

I managed to secure financial assistance for the provision of home working technologies and offered this to the senior director responsible for the team. He was at first surprised to hear this had been an issue, as his team manager had not raised it with him. Secondly, he confirmed that he had money available for this if it was a requirement. Through these discussions I learned that, in reality, the barrier had been with the middle management and the lack of trust they were prepared to put in the team to work in remote locations. I was fortunate to be participating within the case study, as this is an example of an issue that may have remained at the surface level, defined as a fault in the design of the space. The 'iceberg analysis' (van der Heidjen et al, 2002) recognises that there are observable events at the tip of the iceberg which, as shown in this thesis, at the surface level seem quite straightforward and apparent. However, as the iceberg goes deeper the trends and patterns of occurrences are not so visible and at the bottom of the iceberg the fundamental driving forces and behaviours are very different to the observable events.

In the research conducted for this thesis, it was shown that there were many causal relationships below the surface of the iceberg. It is suggested they were discovered by their manifestation in the workplace: "...we cannot see these structures, but we

know of their existence through their manifestation in the events we can observe”
(van der Heijden et al, 2002, p.169).

In reality it was merely the rhetoric of middle management that was manifesting in the workplace. This was a challenge on the freedom of choice, empowerment and trust that had previously gone unquestioned with the original residents in WotF. It was a signal of the importance of providing enabling technologies, as a symbol of commitment and trust as well as to provide the ability to function more innovatively. This was the point where I wondered how much the physical design is ‘scapegoated’, and becomes a victim of subtler underlying factors; factors which would be almost hidden from those outside the field of practice. I had come to realise how quickly the design can be taken at face value and criticised for others’ misuse or abuse.

This new team joining the WotF expressed a different, less positive experience and reported a reduced overall increase in productivity. The constant was the physical design, but the factors that were different from the original residents’ experience were leadership, trust, peer support and informal structures. My assumptions that these factors were the variables that would provide insight into what makes a positive difference necessitated further exploration. I used data gathered from the two sub-cases to assist this process. The two sub-case studies are deemed largely unsuccessful by the organisation, and this is mainly because, although the physical environment has been changed and modernised to reflect a new work environment design similar to WotF, the staff based there are very unhappy and the mood within both spaces is not reported as ‘friendly’. The story of each will be told below.

4.3.3 The Story of FutureSpace

Around the time of their move back into the newly redesigned workspace, there was an organisational change that impacted significantly on the five teams in FutureSpace. The original five teams were re-organised and split into two quite separate and distinct teams. I observed that not only were people investing a lot of energy in coping with the physical changes and new things to learn in their workspace, but also that there was a far greater force of emotions at play around the meanings of their newly reorganised team structure, and how that would affect their day to day roles.

In an interview during the first evaluation of FutureSpace (B3.2), it was said:

Most of my team were contractors who were profoundly affected by the organisational changes taking place at the time of the move to FutureSpace. It was a time of chaos - people thought their time was up (John McCrossan).

The overarching objective of better team working and integration has been a casualty of the organisational changes. Greater operational pressures and changed priorities mean that signification transition projects such as office process mapping have been abandoned (Eleanor Taylor).

It seemed, from the data gathered in the First Evaluation (B3.2) of FutureSpace that so much emotional and physical energy was invested in surviving the organisational changes, that little had remained for experimenting with new ways of working.

It was difficult to understand what insecurities people were feeling at this time, and how they were reacting to changes in the new workspace. As mentioned, the organisation change split the teams into two units, and thus negated the original project aim of a more integrated way of working across the once five teams. It also saw the project champion, who was the director of all five teams prior to the move, now becoming director of only one of the two newly formed units. At this point, the same director left the workspace and took up a private, dedicated office of his own in another building. There was no day-to-day guidance, or management in FutureSpace, and thus no demonstration, or enforcement of “*the way we do things around here*” (B3.2, p.17, paragraph 3.45).

Bob Downes, in his role as Director of one of the teams within FutureSpace stated his view in an interview undertaken during the second evaluation (A3.2):

FutureSpace should not be judged as an experiment in workplace design but against its contribution to the teams' objectives. For this reason, I focus on the outputs which the teams are delivering in terms of the new clusters strategies, leaving the day-to-day management of the space to those who need to make it work for them (Bob Downes).

Bob was not based within FutureSpace with his team. He was, and had been prior to taking up his new post, located in another floor within the building.

The First Evaluation study (B3.2, p.13) depicts it as a place where people work, but which nobody owns. Most participants wanted the appointment of a concierge to encourage high standards of housekeeping and good practice in flexible working, as was the case in WotF. Only a third of the participants felt that their ideas were taken into account regarding the workplace in FutureSpace. Staff would have liked an established channel for making suggestions, flagging up problems and just feeling that they had an opportunity to be involved in, and input to, change. When asked in the Final Evaluation questionnaire (B3.2, question 23):

How well do you feel your ideas and suggestions are being taken into account in the development of FutureSpace?

Table 4.9

Ideas and suggestions considered	No. of respondents
Very Well	-
Quite Well	9
Not Very Well	12
Not at all	7
Don't Know	1

One anonymous comment was supplemented:

I felt it was just imposed on me by the will of a few others.

When the staff moved to FutureSpace there was no choice given to be either a flexible worker or to make a case for a permanent desk. In emails (A3.2) this appeared to be an issue of concern:

As a senior Administrator, I have worked in FutureSpace for 6 months now, I have to say I am not a fan of FutureSpace. I personally would prefer to have a permanent desk within a designated area for our team (Margo Lamb).

With the exception of administrators, whom common sense recommends should have more of a permanent anchor in the office, most of us used the office like any other SE resource: as when we needed it and for clearly defined purposes (Mike Tibbets).

The operational pressures generated by the organisation change seems to have encouraged people only to focus on work tasks, and did not go anyway to investing the time and energy to making social connections in the workplace. A quote in the Final Evaluation (B3.2, p.11) reflecting this was:

I am connected, therefore I exist (anonymous member of staff in FutureSpace).

FutureSpace was a project with almost identical physical design principles to the WotF and, at the outset, it had similar organisation drivers for the change. On appointment as the new Chief Executive, Robert Crawford, went around the

organisation introducing himself to staff and getting a feel for the mood of the organisation. On return to his office, he asked a member of the management team: *“Can you explain to me why the Workplace of the Future works and staff are happy and yet Futurespace has gone so wrong, they both look the same to me”?* (Robert Crawford).

This was a turning point for me, as this question had never been explicitly raised by any member of staff before. For the Chief Executive to comment on this in his early appointment period brought to the forefront again the importance of understanding these new work environments. The Chief Executive observed that it takes ‘more than a lick of paint’ to achieve success in a change to a new work environment.

Another member of staff who wrote to me in an email (A3.2) said:

The physical environment of FutureSpace is satisfactory when viewed in isolation. There is nothing in the design of the FutureSpace environment which encourages or discourages flexible working practices. The message of FutureSpace, however, is that these behaviours have to be decided on and implemented deliberately. Despite its outside impression, the residents of FutureSpace know that it is currently operating as a fairly conventional permanent office environment (Mike Tibbets).

This strengthened my earlier ideas that there are many factors in the complex formula for success that include, but extend beyond the physical design. Gagliardi

(1992, p.32) offers the view that: "...the meaning of a space evokes images, sensations, memories and thoughts for individuals working in it. This view helps to make coherent the multiple, and often contradictory, perspectives of the (apparently) single entity".

The organisation had invested heavily in the physical redesign of FutureSpace, and there was now confirmation that it had not been enough to guarantee any positive difference to the way people work, or the organisation performance. Or had it? I wondered how the productivity levels were reported in data gathered from residents of FutureSpace.

The data gathered from the Final Evaluation questionnaire (B3.2, question 11), issued to the staff in FutureSpace, one year after the redesign of their workspace, obtained the following results:

How would you assess your own productivity since the move to FutureSpace?

Table 4.10

Productivity	No of Respondents
Much better	-
Better	9
The same	9
Worse	9
Much worse	2
No answer	2
<i>Total respondents</i>	<i>31</i>

From the above responses we can see that 9 people reported FutureSpace was better than their previous environment, and 22 people felt it was the same or worse. This

was an extreme difference to the positive response seen from the original WotF questionnaire (A2.1), which reported a much higher rate of perceived productivity increases. This confirms that, although the investment in the physical design was used as a catalyst for change, there were other variables that prevented the success of any real increase in productivity, or positive contribution to change.

Some qualitative data gathered in emails (A3.2) demonstrate wider issues and feelings towards the new work environment, FutureSpace. The following was said:

I don't think FutureSpace works at all well for those of us who prefer not to work from home. Nor does it suit working in project teams.The current FutureSpace designs are TOTALLY inflexible (just the people have to be) (Ian Ross).

FutureSpace is impressive to show visitors around and probably fine for the occasional user but for frequent users it has had a bad effect on teams (Robin Mair).

FutureSpace can be a noisy environment and not conducive to work that requires concentration and no interruptions. Naturally I want to have my cake and eat it! I value highly the ability to work flexibly. Working at least partly from home can deliver benefit to the individual, the organisation and the transport system (Maureen McKeown).

It seemed there was a lot of frustration around the design or ambient aspects of FutureSpace, although it also appeared that that staff were not using hot offices or quieter spaces to work in when they needed to. Instead they working in the open plan area trying to undertake tasks which required a level of concentration.

Reviewing the data from the discussion with Maureen McKeown, above, there was a real sense of a dichotomy where on the one hand she was expressing her recognition of the productivity increases realised from new ways of working but also saying that it was an awful environment to work in. This insinuated that there may be a separation between the new ways of working and the new work environment - and yet within the FutureSpace project, both were intended to be as one. It seemed that there had been a shortcoming in realising the best way to utilise the design of FutureSpace, or perhaps a lack of soft policing of the protocols that were present within WotF.

The second project that can be used to provide further insight and comparison is Skillspace.

4.3.4 The Story of Skillspace

The aspirations and objectives were clear at the outset for the Skillspace project. In an interview conducted as part of the summary evaluation of the new work environments (A1.5), the Director of the teams based within Skillspace said:

I want my staff to be able to 'plug in' wherever they can work best, whether this is at home or in other workspaces. I will also extend an open invitation to others in the Network to use the Skillspace when visiting Glasgow. This, I hope will break down traditional barriers, encourage integration and help different teams understand each other (Evelyn McCann).

The mood of the team in the first six months of working in the redesigned space was extremely positive: it was referred to in the data gathered in the Early Review of Skillspace (B3.3, p.3) as having a “*cheery atmosphere*”. Staff felt the flexible design layout supported the single status nature of the new structure and encouraged more open communication. In data gathered from an email (A3.2) it was said:

The new office space in Skillspace is a very pleasant environment to work in. Here in Skills it has done wonders for building relationships and gaining knowledge of other project areas. The removal of the physical barriers and the introduction of the soft area, coffee machine etc seems to encourage better communication (Karen Anderson).

It was reported that the opportunities to work flexibly signalled greater trust and recognition of individual professionalism. In the first six months, the majority of staff were given the opportunity and support to work flexibly, including the provision of laptops and voicemail facilities. The Director, Evelyn McCann, believed staff felt they had been supported throughout the change:

The skills team members are enthusiastic about changes and have been involved in their design at every stage (Evelyn McCann, A1.5)

Those who had rarely worked away from the office appreciated the atmosphere of trust and empowerment that came from flexible working hours. As quoted in the Summary Evaluation report (A1.5, p.15) which was undertaken approximately 7 months after Skillspace was redesigned:

It is much easier to work flexibly, without perceived censure about arriving late or leaving early, than it would be in a traditional office environment since, people are coming and going all day in the new workspace (anonymous).

Commenting on staff who had been working flexibly before the redesign, it was said in an interview (A1.2) with the Director:

Those already informally working remotely feel that what they do is better understood now (Evelyn McCann).

Some of the staff who worked in Skillspace were part time. The Director believed that there were benefits for these members in the team:

In this new work environment part timers feel more integrated, less different
(Evelyn McCann, A1.2)

The Director of the team based in Skillspace did not participate fully in the change to the new work environment, as she retained ownership of her personal office. Despite this, she verbally encouraged all staff to fully participate in the change and stated that she would be making efforts to adopt other policy changes such as the clear desk policy. This, she said, was to encourage others to utilise her office when she was out without staff being reminded that they were in her office and surrounded by her belongings or paperwork. The staff in Skillspace appeared to accept this level of participation by the director and interpreted her actions as supportive of the change.

It seemed that in Skillspace the attitudes of staff were more positive than in FutureSpace or the Planning and Evaluation team. Their 'willing' attitude was similar to the original residents of WotF. Even when aspects of the design were mentioned for their problems, there was a tolerance displayed by staff. In an email (A3.2) a member of staff was commenting on what doesn't work well in the design of Skillspace:

The down side, and the cause of great frustration is that during the original refurbishment the team was a lot smaller and we weren't planning to hot desk

and as a result personal filing space is a problem. Also the high chairs which are used with the ironing board type desks are terrible to sit on for a whole day. Apart from that everything is great (Karen Anderson).

These positive steps of change in the first six months, as recorded in data gathered in the Early Review of Skillspace (B3.3), were soon to be challenged by wider organisational change. The story of Skillspace is above all a story of rapid growth. Within the first six months the space went from being home to the original 22 people based there, to 42 people as the new structure saw a growth in the teams. This was challenging the physical design space allocation, which was originally planned for 22 flexible workers, particularly as some people were reverting to more 'traditional' work patterns of ownership of spaces, including permanent desks or offices. Many of the new staff joining the team had not been part of the early preparation work, or induction to new, desired cultures and behaviours, so had no awareness of the drive for the new ways of working. The organisational change divided the one team into two distinct teams, one of which was led by a manager who choose to revert back to owning a traditional office within the space. There was a sense of a return to a more hierarchical structure, after all the hard work to flatten this out in the previous six months.

Throughout this organisational change process, the director with overall responsibility for the two teams had remained within the workspace with the teams, despite retaining residency of her permanent office. She had been verbally supportive and encouraged staff at the beginning of the change but after a few

months there was little communication about the on-going participation in the new work environment. By the time the team expanded, around six months after the initial change, the day to day workpatterns of the director demonstrated a traditional workstyle. This was mainly because she remained based in her own office. It was not obvious to the new staff joining that the director was supportive of new ways of working and some of the original staff reported that the director was making a feeble attempt at displaying an active step towards change. There was no confidence from the original staff that the director could practically demonstrate the new work practices to the staff joining and lead them by example.

The effects of rapid growth for this team have to be considered. It is unlikely that the doubling of numbers could have been accommodated in the old physical design with cellular offices and permanent desks. In the new work environment the frustration began to rise amongst staff over workspace. As one staff member commented in an email (A3.2):

I do feel that we have spatial difficulties in Skills which are making the hot desking aspect of it extremely difficult. (Lack of hot desks, lack of space to store drawers, poor mobility of drawers, etc). These problems outlined with our hot desking situation have been raised and are apparently being looked at at the moment (Linda McKechnie).

However, the shortage of accommodation in the new environment began to undermine the original objectives of the project and created a “two-tier” culture,

where those who used hot desks were disadvantaged by having to look for a free space when in the office. Those who reverted back to permanent worksettings seemed to have the advantage of ease of finding space to work. The opportunity to suit the space to the task, and thus gain a beneficial return on the physical design, was reduced by permanent occupancy of what was designed to be flexible space. This project started off positively, with leadership, trust and empowerment all supporting the new ways of working. However, after six months at the time of growth in the team, this leadership reflected a more traditional style of hierarchy and physical presence in the highly utilised workspace and created a negative effect on the project overall. Skillspace provided a powerful supporting set of data to compare with earlier findings around the importance of leadership and change.

Skinspace was a successful project in terms of overall satisfaction and positive experience in the first six months, until these changes occurred, and yet the physical design remained the same throughout. The physical design had to cope with the organisation changes, without any attempts to reconfigure the space. This data gathered from Skillspace also shows the physical design as being both a positive contributor within the first six months, and then a negative contributor when the management changes were underway, with the design remaining constant and unchanged throughout. This would suggest the psychological meaning changed for the individuals based there. Symbols that were viewed as liberating at the beginning; such as the actions of staff freely working flexibly and the artefacts associated, such as hot desks; became symbols of a two-tier culture and were a signal of the return to hierarchy and tradition.

The original staff were hopeful that the leader would encourage the new members to adopt the flexible workstyles, but no such direction was given either by example or by instruction.

4.3.5 Summarised Presentation of Case Study Findings

From the case study write up and data presented, areas can be proposed for further consideration and discussion in chapter five to follow.

The key finding from the WotF case is that a new work environment can contribute to organisation performance, more specifically, an increase in positive productivity levels. The physical environment re-design has a key role in the support of the changes within a new work environment, but as one element amongst others, social and physical, working together to create change.

It was highlighted that a new re-designed colourful environment does have an initial impact on motivation and productivity but the new work environments contain more than design and décor. They symbolise change in work culture and attitude that seemed to signify the importance of trust in individuals, and consideration of colleagues and workplace resources.

It was found that workplace re-design to a new work environment can be used as a catalyst for change, but where major organisational change is taking place concurrently, the implementation of new work environments may be seen as a lower

priority and perhaps an irritation. It seems that moving staff to a new work environment can use the physical redesign of the workspace as one step in a change process, but there is a requirement for consideration and effort to be given to more than the physical aspects of the change.

The personal effects on individuals, from new work environments and flexible working, became clearer through the case study. It is felt that flexibility, which is simply about the occasional day worked from home, does not exploit the benefits which may be achievable, such as better personal organisation, increased team connections and savings in office space. The move to formal and established new ways of working within a new work environment which benefits both the individual and the organisation seems to involve an initial discomfort period and a requirement for increased personal organisation. Effective preparation and planning of work activities appeared necessary within the case study. Team leadership was an important factor in establishing, encouraging, or obstructing new ways of working, which if not appropriately established, appeared to have a detrimental effect on the work environment. It was viewed as having an inappropriate design or was utilised in an inefficient way.

Chapter five to follow will focus on further synthesis and interpretation of these findings, more specifically; the role of the physical environment within the context of an overall organisation system, with consideration of the effects on individuals and organisation effectiveness

Chapter 5

DISCUSSION AND INTERPRETATION OF CASE STUDY FINDINGS

Contents

- 5.1 Discussion and Interpretation of Case Study Findings**
- 5.2 Cross Case Comparison and Synthesis of Findings**
 - 5.2.1 Cross Case Comparison of Management/Leadership**
 - 5.2.2 Cross Case Comparison of Informal Organisation Structures**
- 5.3 Challenges in Interpreting the Findings**
- 5.4 Consideration of Effects on Individuals**
- 5.5 Towards Theory Building from Findings**

5.1 Discussion and Interpretation of Case Study Findings

This section will focus on an in-depth discussion of the findings from the case study, and provide context for the theory building offered in the conclusions - chapter six of this thesis.

Eisenhardt (1989) states that, traditionally, the combination of literatures reviewed, common sense and experience are what authors use to develop theory. She claims the link to the actual data is usually lacking. When there is little prior empirically developed theory for a phenomenon, theory building from case study research is appropriate because it does not rely upon previous literature or prior empirical evidence (Eisenhardt, 1989). In relation to understanding contemporary workplaces, in particular the links between the physical and intangible elements, empirically based theory is limited (Bitner, 1992; Cairns and Grimshaw, 2000; Duffy, 2000). Therefore, in shaping hypotheses for building the theory, I will focus on a search for more empirical evidence behind the case findings. This will lead to a crystallised construct definition and assist in building theory, whilst increasing the internal validity in the process (Eisenhardt, 1989).

5.2 Cross Case Comparison and Synthesis of Findings

I was keen to explore the relationship between the physical and non-physical elements across the three projects, and to investigate any dependencies that might be

perceived to exist by those involved in the projects. Insight and comparisons drawn across the three projects allowed a richer understanding, and contributed to emerging understanding of patterns of factors that are of significance in the process of change to new work environments. According to Pettigrew (1990), there are searching tactics that can be used to force investigators to go beyond initial impressions, especially through the use of structured and diverse lenses on the data. These tactics improve the likelihood of accurate and reliable theory; that is, surfacing theory with a close fit with the data.

The approach used was time oriented, as indicated by the summary in Appendix D. As shown from the headings in the summary constructed, it commences with the preparation and pre-move planning, through to the first six months of each project's initiation. Summary transition models were also constructed as an aid to understanding the changes in the work environments over time (Appendix E).

In constructing theory from case study it is suggested (Yin 1984; Eisenhardt, 1989; Gomm et al, 2000) that analysis of data should incorporate cross case pattern search. This allows familiarity with sources of data to occur and early insights for theory generation to emerge. The historical data were investigated on a project by project basis, and then cross case analysis was conducted. There were limitations in the cross case comparison exercise, since WotF is the dominant case, the data sources available were greater in number relative to the other two sub-cases. My emic view as researcher was also more prevalent in the main case, WotF, as this was the workplace that I inhabited daily. In the other two projects my presence or emic insight was more periodic.

The Comparison Summary (Table 5.1, over) highlights key factors identified from the data analysis of the main case study and the two sub-cases, and draws comparisons. As the WotF is the main case study and focus of this thesis, it is the one against which I compared the other two sub-cases. The WotF is split into two columns for analysis, the first one illustrating the first stage original residents who moved into the space in 1996, and the second stage representing the Planning and Evaluation team who moved in over two years later. As the first stage WotF project was the only one with positive outcomes, as shown in the impacts section of table 5.1, i.e. productivity increases reported, staff reported they were happy working there and the project achieved its original stated objectives, it has been used as the constant against which all others have been compared. The table 5.1 highlights, in yellow, those items that were different to the first stage WotF, but consistently the same in all other projects (second stage WotF, FutureSpace and Skillspace).

Table 5.1 Comparison Summary

	Future Space	Skillspace	First Stage WotF Original Residents	Second Stage WotF P&E team
Goals & Objectives				
Clearly set out prior to the move	Y	Y	Y	Y
Physical Design				
Flat structure/no hierarchy or dedicated offices	Y	N	Y	Y
Bookable shared facilities for flexible working	Y	Y	Y	Y
Redesign of original space	Y	Y	N	N
Pre-move Features				
User involvement in design phase	Y	Y	N	N
Users inducted to new ways of working	N	N	Y	Y
Support or office based staff fear of increased work	Y	Y	Y	Y
Positive attitude about the move	N	Y	Y	N
Drivers				
Happy to leave old environment	Mixed	Y	Y	Y
Active informal structures	Y	Y	N	Y
Management Support				
Team leader working/leading in new way	N	N	Y	N
Full Trust displayed in workpatterns (time)	Y	Y	Y	N
Homeworking encouraged and supported	Y	Y	Y	N
Workplace management/concierge –etiquettes	N	N	Y	Y
Information Technology				
Full support provided for remote working	Mixed	Mixed	Mixed	N
Organisation Change				
Wider organisational change/restructuring at time of move or settlement	Y	Y	Y	Y
Impacts				
Increased productivity reported	very limited	very limited	Y	very limited
Staff report they are happy to work in new environment	N	N	Y	N
Achievement of original goals & objectives	N	N	Y	N

Note: Y=yes N=no. Source: developed for this thesis from analysis of data collected

By looking at the data in a comparative and more strategically focused way, it allowed an opportunity to consider what factors might make a difference towards the success of implementing a new work environment. In all three projects, the physical

Table 5.1 Comparison Summary

	Future Space	Skillspace	First Stage WotF Original Residents	Second Stage WotF P&E team
Goals & Objectives				
Clearly set out prior to the move	Y	Y	Y	Y
Physical Design				
Flat structure/no hierarchy or dedicated offices	Y	N	Y	Y
Bookable shared facilities for flexible working	Y	Y	Y	Y
Redesign of original space	Y	Y	N	N
Pre-move Features				
User involvement in design phase	Y	Y	N	N
Users inducted to new ways of working	N	N	Y	Y
Support or office based staff fear of increased work	Y	Y	Y	Y
Positive attitude about the move	N	Y	Y	N
Drivers				
Happy to leave old environment	Mixed	Y	Y	Y
Active informal structures	Y	Y	N	Y
Management Support				
Team leader working/leading in new way	N	N	Y	N
Full Trust displayed in workpatterns (time)	Y	Y	Y	N
Homeworking encouraged and supported	Y	Y	Y	N
Workplace management/concierge –etiquettes	N	N	Y	Y
Information Technology				
Full support provided for remote working	Mixed	Mixed	Mixed	N
Organisation Change				
Wider organisational change/restructuring at time of move or settlement	Y	Y	Y	Y
Impacts				
Increased productivity reported	very limited	very limited	Y	very limited
Staff report they are happy to work in new environment	N	N	Y	N
Achievement of original goals & objectives	N	N	Y	N

Note: Y=yes N=no. Source: developed for this thesis from analysis of data collected

By looking at the data in a comparative and more strategically focused way, it allowed an opportunity to consider what factors might make a difference towards the success of implementing a new work environment. In all three projects, the physical

environment had been changed to reflect a new work environment, with supporting working policies embracing new worksettings, such as hot desks and hot offices. In all three projects, the physical design was very similar, and yet the outcome of each project in terms of self-reported productivity and overall performance was different. These differences are shown in the impacts section of Table 5.1.

In the WotF, a substantial investment was made in the design of the workspace and the impacts were very positive. This was not attributable to the design alone. There were many more factors addressed that must be considered in appraising the return from the changes to the physical design. The leadership and management within the workplace of the future, coupled with the informal structures which provided peer support, appear fundamental to its success. There is evidence to suggest that, despite the reporting of the colours and openness in the workspace as having a positive effect on levels of creativity and productivity, this was secondary to the autonomy brought by new ways of working and flexibility.

As shown in Skillspace, the physical design was very similar to WotF, but undertaken on a more modest budget. Foremost, Skillspace was initially seen as symbolising the culture shifts that had been achieved through restructuring the team, and focusing on individuals' personal development. The modestly refurbished, bright and colourful physical redesign was seen as the 'icing on the cake'. The new environment was viewed as a success for a short time, and evidence suggested that it engendered tremendous enthusiasm and support for change after the refurbishment. However, upon an organisation change

restructuring the team and thereby impacting on the variables, there was a negative effect overall. Old habits and hierarchy crept back into the workplace, and the new physical design was not enough to prevent the return to traditional work patterns, or even to sustain the positive impact that had been achieved in the first six months.

In FutureSpace, the physical redesign involved a substantial investment in financial terms. However, despite organisation attempts at promoting user involvement in the design phase, staff felt that the design was 'imposed' upon them. The FutureSpace design was more detailed than WotF or Skillspace. In addition to the range of new worksettings and colours, in consultation between some staff and the designers additional features had been introduced, such as display areas for exhibiting customers products. While external visitors admired the design, it did not engender positive feelings amongst the staff – being viewed as a merely superficial change.

The data reveal that even the most exciting design, or the most comprehensive consultation with staff does not ensure a successful positive effect on productivity, or organisation performance overall. There are factors independent of the design that can affect the role of the physical environment. The physical design of a workplace cannot be a sufficient or sustainable tactic for implementing new ways of working and improving organisation effectiveness. In cases where the non-physical, intangible factors, such as leadership and management are not addressed, the physical environment may even become an irritant, or barrier to change. For example, in WotF the Planning and Evaluation team reported noise levels in the

workplace to be distracting to their effective work activities. This was a physical manifestation of the poor management style, and lack of trust for staff to work at home in quiet, confidential settings which would have been more appropriate to the tasks undertaken. In this instance, the manager wanted the staff to be present in the office every day and, therefore, did not buy the appropriate tools to enable the team to periodically work from home. The physical workplace environment was perceived as inadequately designed by the Planning and Evaluation staff unhappily working there, but it was the surfacing and physical manifestation of deeper rooted management issues and staff discontent that contributed to the workplace being viewed as ineffective by staff (Chapter 4, p.207-209).

In accordance with the project objectives, it appeared at the outset that the physical environment was a component part of the overall matrix for successful change to new work environments in pursuit of organisation effectiveness. When other factors, like supporting technologies and management style, were in place and complementary to the desired changes, then the physical environment was a positive contributor. However, in reviewing the data from an historic perspective, when management, or peer support was weak, or not positively supportive, the effect of the physical environment was perceived as very negative. What is most interesting is that, in the main, the physical design principles of all three projects remains the same, and yet has radically different effects on staff, dependent upon these other situational factors. I will discuss these situational factors in more detail in the next section.

Many questions are as yet unanswered regarding the complex matrix for successful change within new work environments in pursuit of organisation effectiveness. As noted earlier, the purpose of this section is to explore the data in greater depth and to explore the empirical underpinning of this research in advance of building theory in chapter six. In search of deeper insight and synthesis of findings, the comparison summary (Table 5.1) highlighted two factors that are worthy of further contemplation. There were differentials between the two stages of development of WotF which require further consideration when compared with the other projects, namely: management support/leadership, and positive informal structures. There was also a difference in the outcomes of the first stage of WotF and the other projects. The first stage of WotF was the only project which reported substantial productivity increases, overall staff satisfaction, and the achievement of the original project goals and objectives. As a result of the findings from the cross case comparison, the key differentials of management/leadership and informal organisation structures will now be discussed further.

5.2.1 Cross Case Comparison of Management/Leadership

In the first stage implementation of the WotF project, the management style was participative and each of the leaders was 'walking the talk' amongst their teams. There was no single ownership of space, and neither were there displays of status in the workplace. This new balance was challenged in the second stage of implementation in WotF when the team, Planning and Evaluation, moved into the

space, and management trust in that team was questionable. This led to the overall experience of the team being less positive than the original teams based in WotF (Chapter 4, p.205-207).

In Futurespace, the management style was less supportive and, immediately after the teams moved into the space, the director responsible for the teams left the project and obtained an office of his own in another part of the building (Chapter 4, p.212). This had a negative effect on the willingness of those remaining in FutureSpace to change and, hence, the opportunities to increase levels of productivity and satisfaction overall through supporting management or leadership styles were not realised.

In Skillspace, all staff except the director were expected to share space and participate in the workings of the new office design. The director kept a dedicated office within the body of the workplace, which was clearly visible to all other participants (Chapter 4, p. 221). Attempts were made from the outset to appear to be supportive, and one example of this was that the director's office could be booked out as a 'hot office' when the director was out. Although this was not as strong a signal from the leader as could have been given, nonetheless, it was viewed by staff at the beginning as a sign of the leader's attempt to contribute to change along with them. Through time, as more change occurred in Skillspace, and traditional patterns of work returned, the director's attempt to contribute to change was seen as feeble (Chapter 4, p.223).

The pattern of teams moving in, and senior management deserting them to settle in another location within the organisation, appears to have negatively affected the projects. The original WotF leadership was, by far, the strongest in leading by example and taking a participative management approach (Chapter 4, p. 201). The other leaders were either absent personally from the location of the physical project space, or absent from supporting the change process. In either case, this appeared to have negatively affected the staff and project success.

The data across the cases provides confirmation of the view – expressed in some literature (Argryis, 1957; Likert, 1961; Mowday et al, 1982; McGregor, 1987; Kanter, 1989; Berry and Houston, 1993; Handy, 1995; Murphy, 1996) – that significantly better outcomes result from a management / leadership style that empowers, trusts and involves staff.

There are limitations in this finding, as there may have been another factor that influenced this result. Notably, the extent of wider organisation change. During the move to the new work environments all three projects were being affected in some way by organisation changes. However, it is recognised that for FutureSpace and Skillspace the changes were more extreme than in WotF. During these periods of organisational change, staff in FutureSpace and Skillspace may have felt vulnerable and insecure about their future job prospects, as the focus of the organisational change at that time was on restructuring and downsizing. This could have influenced the role of management within these projects, and the ability for staff to openly, and without apprehension, embrace changes. This is different to the WotF because

during their period of moving to the WotF, there was restructuring within the organisation but no downsizing, and hence arguably less insecurity about changes related to job loss.

5.2.2 Cross Case Comparison of Informal Organisation Structures

Informal organisation structures strongly influenced two of the projects. In the first stage of WotF there was peer pressure to keep a positive attitude and support the project, to ensure its success, even when, in some cases, it required staff working harder and for longer hours (Chapter 4, p.186). Considering the analysis of data regarding informal organisation structures, it is felt bias may be inherent in the data. Most of the original staff who moved to WotF were 'volunteers' willing to participate and support the project aims. Arguably, their tolerance levels and team support groups may have been focused on a positive experience being the preferred outcome. In less cohesive and arranged circumstances, change of this nature to office design and ways of working may not have seen the same extent of team or staff awareness regarding the change objectives or aspirations. The peer group support through the change to WotF was reported higher than it had been previous to the move. It seems a close association with success was desired.

In FutureSpace, there was an outwardly spoken, negative peer pressure present that encouraged 'bad mouthing' and negative comments towards the project. An extract from the Summary of Evaluations report of the three new work environments (A1.5) shows how staff's attitudes towards the new office environment was demonstrating

an air of negativity. This also highlighted the negative effects of the organisational changes that had taken place, and of the removal of the director to another location outwith FutureSpace. The evaluation report concludes:

“Participants felt they had been left to get on with things without much support. There was no obvious reward for experimentation with new ways of working. Almost 65% of participants say they are working more flexibly but peer approval is not generally accorded to those who work remotely. They may be seen as opting out or hiding” (Hawthorn, A1.5).

It is suggested in the literature (e.g. Forester, 1989, Cairns, 2002) that preparing the staff for the move into new work environments was vital to the positive experience of a move and vital to its longer-term success, as the attitudes towards change were crucially important. The experience of the WotF project supports that view. A lot of time and effort was spent in preparing the original staff for the move to WotF and in trying to engender a positive attitude towards the move. Staff believed that participation in the project would lead to personal benefits for them, both personal and work related. In return for their participation they were going to receive new technologies and the ability to work in new ways that were formally endorsed by the organisation. The WotF staff had expectations as set out in the original email inviting them to participate in the project, that they would receive a formalised approval to experiment with new ways of working and advances in workplace designs.

As less time and effort was spent on preparing staff in the sub-cases, and as this was believed to be one of the reasons for them being less successful, the researcher was able to explore this further and refine thinking through testing data gathered regarding the settling of the Planning and Evaluation team to WotF.

More effort was put into preparing the Planning and Evaluation team for the move to the WotF than had been exercised in the original move of staff to WotF or the sub cases. Team induction days were organised for the Planning and Evaluation team and open-sessions where they could ask the concierge, or management about any concerns they had regarding the move and working in new ways. Continual email dialogue was also encouraged within the team to alleviate pre-move issues. The management of the Planning and Evaluation team were encouraging them to participate, focusing on highlighting the benefits for them. Despite this considerable input of effort to involve the Planning and Evaluation users in the process of the move, their perception was that they were abandoned to settle-into the workplace by themselves and had limited choice in the process of the move.

The level of user involvement in the design of change to the workplace varied across the projects. FutureSpace, Skillspace and the Planning and Evaluation team within WotF were encouraged to be practically involved in selection of design aspects and decision making relating to the workplace changes. The perception however, varied in relation to the actual, with WotF original users and Skillspace original users being the only two groups within the study who held the perception that they were involved in the process. The perceptions of the others – who were practically involved – was

that they had little or no ability to influence decision making or the changes being imposed upon them. The perception rather than the reality of the user involvement appeared to influence the attitude and support of the users in the process. Table 5.2 below provides a summary of the actual and perceived involvement of users.

Table 5.2

Case study users involvement	Actual involvement	Perceived involvement
WotF original users	N	Y
WotF Planning and Evaluation users (involvement in design of work processes)	Y	N
FutureSpace users	Y	N
Skillspace original users	Y	Y
Skillspace users post 6 months (involvement in design of work processes)	N	N

Note: Y=yes N=no

Despite the additional effort, the attitudes of the Planning and Evaluation team were negative about the change and the new environment. This challenges the literature (Kanter, 1983; Forester, 1989; Becker and Steele, 1995; Kotter, 1995; Duffy, 1997; Godard, 1998; Bradley and Osborne, 1998; Cairns, 2002) and prior thoughts, that user involvement in the design process and move preparation could alter the positive buy-in. The difference between this team and the original staff who moved into WotF was that they were moving into an already established workplace with others residing there, and with whom they had no involvement. Therefore, it may be that this contributed to them feeling as if they were different to the other teams based there, and that others did not understand their needs. There did not appear to be the cohesiveness that had formed between the other five teams who moved in originally.

The informal structures in the teams based in FutureSpace and the Planning and Evaluation team were apparently strong, but the focus was not on positively embracing the change. Instead, the feelings were that this was something they had to get through as a team without leadership support:

“Participants in FutureSpace felt they had been left to get on with things without much support” (Hawthorn, A1.5).

They were strong and supportive of each other, but their feelings and attitudes towards the environment they were moving into were negative:

“FutureSpace is individualised...people have to work pretty hard to humanise and socialise it” (Hawthorn, A1.5).

For them, perhaps the workplaces symbolised spaces that they experienced as unconstructive to their work and hence, held bad feelings towards. Their feelings towards the move were:

“In Planning and Evaluation their move was viewed by the team as something they had to do and together they would get through it” (Hawthorn, A1.5).

The peer support, or pressure, in these situations was positive intra-team, but negative against the workplace and other teams based therein. The findings show that despite the levels of actual involvement of users, perceptions and attitudes are more likely to affect their acceptance of the changes.

In summary, it appeared, from a deeper analysis of the findings, that although there is a demonstration that the new work environment can positively influence productivity, there was a complex recipe of many ingredients – physical and social - that were salient to the understanding of this. Cross case comparison (Yin, 1984, Eisenhardt, 1989) was used to focus on those factors across the three projects, WotF, FutureSpace and Skillspace. I believe that by using a case study approach to analyse the data in an attempt to understand new work environments, a deeper understanding has come from the mass of data and participant involvement in the case that could not have been achieved by mere discussions with other experts in the field.

5.3 Challenges in Interpreting the Findings

The findings from the WotF case indicate that, in certain circumstances a new work environment can contribute to organisation effectiveness, and to an increase in individuals self-reported productivity levels. However, this finding is worthy of further discussion to disclose some deeper interpretations and problem identification.

Consideration should be given to my role, and the potential effect on interpretation of the findings. There was internal conflict between myself as researcher, manager of WotF, and as an individual subject to the change. From the organisation perspective, I was charged with seeking to uncover the deterministic or positive findings which would be used to ensure the successful attributes of the project were incorporated into future building designs. The organisation was quite dismissive of

the negative or critical findings from the case, mainly due to the immediate assumption that none of the negative aspects would be considered for incorporation into future plans, and therefore they became irrelevant for discussion. From a personal perspective, as project manager there was a desire to establish the project as a success.

As an individual subject, within the case, I had found the experience of the change very liberating, valuing the opportunity to make my decision of choices in workplaces and work settings to suit my tasks and work-life schedule. This enabled me to work from home, or a quiet office in WotF and to choose when I wanted to interact with colleagues. I experienced very few negative factors throughout the change process. As project manager, responsible for the WotF change, there was an element of pride in the role with the desire for a personal association with something that was deemed successful. I felt both of these roles could hold an enthusiastic over-optimism and bias. That, arguably, could have led me in my role of 'detached' researcher, to discover characteristics signalling positive effects of the change to new work environments and simultaneously to exclude contrary data.

As researcher, I became more aware of the possibility of such bias over time. As the new projects were established (FutureSpace and SkillSpace) and the new team (Planning and Evaluation) moved into the new work environments, I began to challenge myself for earlier omission of contrary data. I could see from other projects that the change for individuals could be, and was quite different. I

questioned myself about what I was learning that was new or contrary to what I had seen in the original WotF redesign, and in the early evaluations.

Through seeking to move to explicitly exposing and discussing the negative effects or experiences that a new work environment can create and contain, I began to deal with the inherent problem of bias. One example of a situation where I explicitly challenged my potential for bias was in constructing data source A3.2. This was an email that was sent to all staff in the three projects to ask them what they felt was working and not working within the new environments. This was a deliberate action by myself, as researcher, to ensure I was openly considering negative aspects and seeking feedback of the project. It may be reasonable to assume that if I were not a 'detached' researcher and was only the project manager I may only have satisfied the organisation agenda which focused more on identification of the positive aspects of the project. I received responses from 27 users, the majority of these responders copied all users of the project spaces into their email response. Some of these responses were considerably detailed and lengthy extending to 2 or 3 pages of feedback via email. However, I suspect that many users did not respond as the use of email was not anonymous. On reflection, an alternative option for responding, which gave the user anonymity, may have provided a higher return rate – something such as the ability to send responses in the internal mail to me, not disclosing individual's identities. However, the details of the responses and the wider circulation of the responses to other users within the projects went some way towards counterbalancing the lower return rate.

This exercise forced me to take a more balanced approach when considering the elements that were contributing either positively or negatively to the success of the projects. However, despite my desire to promote openness, I was aware that as people responded via email to my request, there might have been an issue over the extent of their openness. As it was not possible for them to remain anonymous in the email process, the potential for lack of trust or openness was present and may have constrained the information given.

As researcher, by recognising the importance of both positive and negative feedback, I was able to gather additional data from the staff to challenge my biases and notions about the success of the projects. The summary of the feedback from emails (A3.2) is shown below:

Table 5.3 - Summary of Data Source A3.2

WORKS	DOESN'T WORK
Bright colours	Pedestals too heavy
Main areas have lots of natural light	Chairs at touchdown very uncomfortable
Variety of meeting areas	Confidential phone box – hollow sound
Informal meeting areas	Too busy
Homeworking reduces car journeys (also a benefit to the environment)	More storage needed
Saves on floorspace	More hot offices & meeting rooms needed
Café area	No natural light in meeting rooms
Flatscreens and wireless technology	Can be noisy
Living room / informal spaces	Lack of external phone lines for modem use
Shared resources	Not everyone wants to work from home
Concierge	Some hot offices are very isolated – no windows
Furniture	Pigeon holes too big – used as filing tray
Voicemail	Shape of concierge desk
Open plan layout	Team communications suffer because they don't want to talk each other loudly in the open plan area and disturb others
No hierarchy / status symbols	Miss a space of my own
Technology	Use of mobiles distracting
Cordless phones	Full hot-desking makes it difficult to preserve team identities
Flexibility	
Permanent area	
Picture / ideas board	
Relaxed atmosphere	
Trust	
Individuals positive attitude	

There was demonstration of the workplace extending beyond the redesigned office, examples of such being where staff talked, with prompting, about homeworking - some who were experiencing the benefits of working from home and others who were feeling that it would not work for them to be at home. Whether the comments that were made were about what works or doesn't work, they made me more aware that staff felt the workplace embraced elements or places outwith the redesigned physical office space.

Many of the comments presented in Table 5.3 above incorporate both physical and non-physical related elements of the workplace. I was surprised at how many non-physical elements of the workplace e.g., trust, were deemed significant by subjects of the study, particularly as my request was for information about the 'workspace' rather than 'workplace' with its less physical connotations. E-mails revealed that staff were actively breaking down the distinction between the workspace as merely physical space and the workplace as containing intangible, (non-physical) factors.

5.4 Consideration of Effects on Individuals

As discussed in chapter four, productivity improvements reported from WotF original staff in the questionnaire (A2.1), and in qualitative personal accounts, indicate reasons for increases being associated with notions of trust and empowerment for the individual to choose places and time of work. These changes that were valued by the staff in WotF were influenced by both the management style

and the physical environment. Though both were noted for their importance, when the management style was not supportive of these new flexible, empowered ways of working, the productivity reportings were not positive.

A problem with this finding is that, as a researcher, it was questionable whether or not I was receptive to any negative personal implications for individuals participating in flexible working arrangements. Whilst the benefits were clearly being surfaced through the data, in support of positive personal experiences obtained through the new flexible and empowered ways of working, there were also indications that staff were working longer hours, extending the length of their working day, and thereby encroaching into their home or family time. This was demonstrated in data source A1.3, p.36, the second evaluation of the WotF where the consultant recommended:

“There is substantial evidence during this evaluation that individuals are becoming stressed through workload pressures. Individual stress may be easier for managers to spot in a traditional environment. Special care is needed to recognise those individuals who may be working long hours at home” (Hawthorn, A1.3).

Jonathan Star was one member of staff who decided to hand back his laptop, thereby preventing himself from being able to work beyond the time he spent in the office. He was trying to curb his working day back to a routine more reflective of a typical 9-5, while retaining an element of control between time spent on work and non-work related activities.

I was aware that the data confirmed productivity increases were affected positively by change to a new work environment. The triangulation of different data sources had provided an element of comfortable reassurance regarding the findings.

However, as a detached researcher, there was a feeling that there was a trade-off being made for these positive increases that was not being disclosed in the findings of the case. It was becoming apparent that, despite my desire to see the project viewed successfully by others, which is often measured in productivity increases, it appeared there was an associated cost. It seemed that in some cases the individuals were able to do, or produce, more only because they were extending their hours into the evenings and into personal spaces of their lives. These internalised discussions from multiple viewpoints enabled me to challenge my thoughts and probe the data to increase understanding.

There appeared to be a transition phase that occurred for those who moved to WotF. During this transition an increased level of personal discipline was required to self-manage the personal process of change. The following transition model emerged from the immersion of the reported findings of the positive productivity in a deeper and more meaningful context. In addition, my emic role of observer in the case study, and my personal experience of the change to the new work environment was used to inform the construction of the transition model.

Table 5.4 - Transition model generated from data sources A1.1 (benchmark report), A1.2 (first evaluation), A2 (WotF questionnaire) and A4 (workplace observations).

Pre move stage (including moving into WotF)	Transition stage (between 1 - 6 months)	New stage (post 6 months)
<p>Staff apprehensions about 'presence' in the workplace. Traditionally they would typically be in the office 9-5 (Chapter 4, p.172 & Appendix.E, p.357).</p> <p>Inputs such as the time staff were visible in the office were justifiable demonstrations of work (Appendix E, p.357).</p> <p>Value and recognition symbols of hierarchy, size of one's office, flexibility of hours afforded to the more senior (Chapter 4, p.178).</p>	<p>Individuals value flexibility and empowerment of choice (Chapter 4, p.172). In return the tendency is to overcompensate in work output. Additional hours were given to the organisation. Stress increased for individuals over increased hours and always being available outwith the office (Chapter 4, p.173).</p> <p>Increased levels of personal discipline were required to organise schedules of work and work related activities (Chapter 4, p.175 & 185). The chance encountering of colleagues when in the office was not guaranteed when many were flexibly working, therefore an element of arranged contact was required (chapter 4, p.180 & p.207).</p> <p>Some staff who found the transition difficult and had not established new routines of discipline and planning to work in more flexible ways, found the office space quite ineffective (Chapter 4, p.207 & 217). In certain circumstances, e.g., if they had not booked space in advance they may arrive to find less appropriate workspace available.</p>	<p>After a period staff grew more confident as new work patterns became acceptable (Chapter 4, p.184). Individuals gained a balance between the perceived need to demonstrate how much work they were still being able to do by working in new ways. There was a realisation that the overcompensation was neither sustainable nor necessary.</p> <p>Increased awareness that new established and balanced routine required discipline and management to be effective (Chapter 4, p.172 & 173). Confidence in ability to realise expected outputs (Chapter 4, p.173). Support of peers was crucial in achieving this transition in the sense that staff through internal dialogue created an acceptance of standards (Chapter 4, p. 189).</p> <p>Staff valued combination of individual choice and control over work life balance as a new symbol of power and motivation (Chapter 4, p. 171, 173 & 218).</p>
<p>Home working was viewed as a perk, favour or 'skiving'. Not openly discussed - staff would seek informal approval arrangements with their line manager (Chapter 4, p.208).</p>	<p>Feeling of discomfort from home workers that others perceived them to be doing less or avoiding work because they were not present in WotF. There were increased telephone calls into administration staff and email communications to demonstrate availability (Appendix E, p. 357).</p>	<p>Individuals felt less pressured and stressed by the need to balance personal and domestic commitments with working aspects of life. They felt more in control of the fit between the two (Chapter 4, p.174).</p> <p>Some who had not established a balance between home and work had reverted to traditional workpatterns of 9-5 within the office, to define the boundaries between work and other aspects of their life (Chapter 4, p.172).</p>

Dealing with the problem of my potential bias required me to probe deeper into the key findings of the main case. This highlighted the finding which revealed that new work environments could positively influence productivity also contained a complex mix of many other factors and effects for consideration, and that any theory building from the case study findings would require consideration of this complexity.

Whilst it is recognised that there may have been bias in the findings due to the multiple and often conflicting roles that I held - as detached researcher, project manager and research subject, the etic view of the independent consultants, which was reported in their transcripts, was used to inform my interpretation of the case study and assisted some way towards counteracting the potential problem of bias. Eisenhardt (1989, p.546) notes that convergence of observations from multiple investigators enhances confidence in the findings and states:

"Although a myth surrounding theory building from case studies is that the process is limited by investigators' preconceptions, in fact, just the opposite is true. This constant juxtaposition of conflicting realities tends to 'unfreeze' thinking, and so the process has potential to generate theory with less research bias than theory built from incremental studies or armchair, axiomatic deduction."

In the role of researcher, I was conscious of my efforts to overcome preconceptions held as both project manager and member of the case under study. In attempts to 'unfreeze' my thinking and challenge these preconceptions I was able to go through several iterations of my inquiry, aided by the longitudinal aspects of the case study. I was actively seeking to identify any negative factors within the case. This was in

addition to the positive ones that were of interest to the organisation agenda for forward planning of a new building. I designed interventions of data collection, such as A3.2 – emails to subjects - where I was specifically seeking to surface both the positive and the negative elements within the case, explicitly prompting feedback on both.

5.5 Towards Theory Building from Findings

In discussing how to build theory from case study research, Eisenhardt (1989) notes that an essential feature is comparison of emergent concepts with conflicting and similar literature. The discussion of the findings in this chapter, regarding the various factors and their importance in new work environments, challenges the deterministic literature (e.g. Lee, 1971; Canter, 1974; Laing, 1993; Duffy, 1997; Turner and Myerson, 1998; Dovey, 1999) from those who believe that space shapes human behaviour, and that the physical environment will be a catalyst for change and increased productivity within organisations. In addition, it also challenges the motivational and hygiene theories (e.g., Maslow, 1945, Herzberg, 1959) which claim that physical factors can only have a neutral or a negative impact on individual motivation.

This thesis demonstrates that, whilst space has the potential to do more than it is given credit for, other elements of work environments are of greater significance in shaping behaviours and actions within organisations than space. Primary examples

of such elements are leadership and the informal structures discussed in this chapter. Emphasising the social and humanistic factors within new work environments does not negate that there is a role for the physical environment. Instead, it found that as Roberts et al (2001) propose, it is through the acceptance of the multi-dimensional nature of the boundaries of the workplace that organisations may be able to identify new sources of meaning and value.

This approach to consideration of workplace aligns with that of 'liberation theory' (Toffler, 1980; Schiff, 1983; Handy, 1995; Varcoe, 1995; Apgar, 1998). Liberation theory emphasises the main benefits of new ways of working for individuals: matters of flexibility, empowerment and control for individuals over their work life balance, the emphasis on trust and respect, which in turn leads to the potential for increases in productivity. This emphasis on individuals, it is claimed (Schiff, 1983, Handy, 1995), outweighs but does not negate the returns that can be achieved by the physical environment changes. In this thesis, the case study analysis emulates and is reflective of this explanation.

There is support in the findings for the literature which suggests a participative management approach: "Companies must develop a 'people partnership' with their employees" (Kanter, 1983) to ensure positive results and improved performance. These findings are reflective of those of the relay room Hawthorne Experiments (Mayo, 1945), where productivity increases and positive experiences were shown to be as a result of team participation, support and autonomy. The experimental group had freedom of movement, an increased sense of responsibility, and their discipline

came from within the group instead of being imposed from a higher authority (Gillespie, 1991).

The findings of the research both align with and contrast with the humanistic theories of Mayo (1945); Maslow (1954) and Herzberg (1959). Considering Mayo (1945), whose research concluded there was no consistent correlation between the physical environment and workplace performance, and that it was, therefore, less interesting for study, this study confirms that there is a lack of definitive consistency between the physical environment and workplace performance.

However, it also raises issues around the belief that there is or can be a relationship between them - which is unexplored by research to date. Considering Maslow's (1954) motivation theory, which states the physical environment satisfies basic physiological needs but only becomes important when removed, this study has demonstrated that the physical environment can be viewed as more than a basic physiological provision of shelter. In some situations within the case study, it was viewed as a motivator for individuals in the workplace, beyond the basic satisfaction of their physiological needs. Considering Herzberg's (1959) two-factor hygiene theory, which stated there were two distinct elements within the workplace - hygiene factors and motivators –with the physical environment within the hygiene factors, this study has shown that the physical environment, in a single manifestation, but in different situations, has been viewed by staff as both hygiene factor and as motivator - recognising its ability to be both. Within the sub-case, FutureSpace, the findings demonstrated that the physical environment was viewed as a necessary evil, and fell into the hygiene factor category. Within SkillSpace, the

findings blurred the distinction of the physical environment as either a hygiene factor or motivator, as within the first 6 months the physical environment was reported to add to the motivation and productivity of staff. Then, after 6 months, when wider organisation changes occurred, the same physical environment was viewed as a hygiene factor which was reported detrimental to the work productivity.

These humanistic theories (e.g., Maslow, 1954, Herzberg et al, 1957) suggest fairly simple and consistent relationships between the physical and the intangible elements within the workplace, in which the physical environment does not have the ability to positively influence motivation or performance of individuals for the organisation effectiveness. The findings of this thesis have shown that in certain circumstances these theories are both right and not right. The main WotF case study demonstrated that, for one group at a point in time, the physical environment was a motivator that positively contributed to productivity of individuals (Chapter 4, p.183-190). When the Planning and Evaluation team moved in, later, to the WotF they experienced a different effect and the physical environment was found to be a hygiene factor, which did not contribute to their productivity levels but was viewed as a necessity for their work (Chapter 4, p.218-220). This study has found that there are complex relationships between the physical environment and the intangible aspects of the workplace in relation to organisation performance, that are worthy of further study.

In summarising, within this study developing a contribution to understanding new work environments through study of pilot projects in SE is the main research

objective. Tangible (physical) and intangible (social) factors have been identified as crucial in contributing to the increased understanding. More specific to the role of the physical environment, it was found that the built environment and organisation theory literatures were both right and not right. The built environment literature (e.g., Lee, 1971; Canter, 1974; Laing, 1993; Duffy, 1997; Turner and Myerson, 1998; Dovey, 1999), from an architectural deterministic viewpoint, states that the physical environment can impact human behaviour in organisations. This was both right and not right, as my research found that, if the social elements such as leadership were aligned, the physical environment can influence behaviour. However, if the social elements are not supportive or aligned, then changing the physical environment is unlikely to affect behaviour.

The work of some, such as Mayo (1945), Maslow (1954), and Herzberg (1959), states that the physical can only be viewed negatively or, at best, neutral to organisation performance. This was supported in the examples where the social elements, such as leadership, were not aligned, i.e., FutureSpace, and the environment was viewed as a hygiene factor. But in other situations, i.e., WotF and Skillspace original teams, where the social elements were aligned, the physical environment was able to bring an additional level of increased motivation and productivity, and thus challenges the hygiene two-factor theory.

No immediate or consistent pattern has been crystallised between the role of the physical environment and the intangible, social aspects that contribute to the performance of the organisation. The structure of the theory emerging is indicative

of a grouping of factors that enable identification of higher-level issues to support understanding of what contributes to a successful change in new work environments, recognising the complexity of relationships and considering the context specific elements within the case. The next chapter will build upon the data analysed and draw general conclusions, develop theory, and discuss this in the context of the literature reviewed.

Chapter 6

SUMMARY AND DISCUSSION

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- 6.1 Introduction**
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6.1 Introduction

The intent of this thesis is to contribute to increased understanding of new work environments through study of pilot projects implemented within Scottish Enterprise.. The approach taken involved a series of steps. There was a review of the relevant literature drawn from a range of fields, including organisation theory (e.g. Graham, 1971; Burrell and Morgan, 1979; Hassard and Pym, 1990; Hatch, 1997), organisation and general management (e.g., Peters and Waterman, 1982; Kanter, 1989; Drucker, 1992, Handy, 1989) and some built environment literatures (e.g. Becker and Steele, 1995; Vischer, 1996; Duffy, 1997; Laing et al, 1998; Grimshaw and Cairns, 2000; Becker and Sims, 2001), in order to analyse the range of diverse, and often conflicting views on the role of the physical environment in organisations, and to review the latest discussion on new forms of work environment. Two research objectives were identified to aid exploration of the phenomenon; first, to contribute to increased understanding of the role of the physical environment in a new work environment; second, to identify the key elements of new work environments and the relationships and dependencies in that context.

Realism methodology, described in chapter three of this thesis, was used to investigate the research problem. Realism methodology acknowledges multiple situations and multiple perceptions of a single reality. The research method used was both exploratory and descriptive, using case study. This form of research method enabled an emergent and descriptive story of increased understanding of new work environments, in the context of Scottish Enterprise, to unfold in the

presentation of findings - chapter four. The aim was not to seek empirically-proven generalisable solutions to workplace design problems. Rather it was to probe the specific, context-dependant factors within the case workplaces, over time, in order to draw out inferences on the nature of individual/workplace/organisation relationships.

Chapter five, discusses the findings in more depth, and provides a critical interpretation to set the context for building theory in Chapter six. This chapter takes forward the discussion and interpretation of findings from the case and sub-case studies, and builds the explanations that are central to this thesis, in order to present a contribution to theory and, in so doing, presents inferences on workplace design and recommendations for future research.

While this section provides a summary of the thesis approach and provides a short recap on each chapter; section 6.2 presents a summarised interpretation of the findings from the data analysed in chapter four. Section 6.3 examines the research objectives and demonstrates the extent to which they have been satisfied through researching the case. Following on, in section 6.4, I conclude on the findings of the research objectives and build the central explanation of the research. Section 6.5 re-engages with the literature reviewed in chapter two, focusing on the key elements that were derived from the research findings. Finally, section 6.6 sets out the implications for future research and practice.

6.2 Findings of the Case Study

The approach taken in chapter four was to present the data in an analytical and descriptive form, and then chapter five provided further discussion on the interpretation of findings. By now, the reader(s) will have formed multiple interpretations of this text, all of which are 'correct', as the philosophy underpinning this thesis suggests perception is reality. Hence, there will be no attempt to discount any of these interpretations as either meaningless, or irrelevant, by their omission from the discussions to follow. On the contrary, it is hoped that the presentation of the case study may have influenced the reader(s) to engage deeply with his/her inner thoughts and interpretation of events.

According to Eisenhardt (1989), shaping hypotheses in theory-building research involves measuring constructs and verifying relationships. These processes are judgmental in theory-building research, because researchers cannot apply statistical tests. She suggests the researcher must judge the strength and consistency of relationships within and across cases and also display evidence in the findings so that readers can apply their own standards.

Key issues will be drawn from the data analysed and discussed in chapters four and five to enable the building of explanation in this chapter. The only attempt to conclude from the case write ups will be undertaken in this section, where I will present an interpretation of the overall change that took place within each of the projects. This will be done by comparing the extent of actual change with the

original stated objectives of change for each of the three projects, namely: WotF, FutureSpace and SkillSpace. To conclude beyond the latter would inevitably alter the reader's interpretation and, as previously stated, it is desirable that all readers retain their own responses in order to build unique interpretations.

Extent of change within WotF

The main case, WotF, was the one that achieved the highest level of positive change towards the stated desired objectives, which were: to exploit business benefits enabled by technology, spatial redesign and new work practices; to develop a positive, productive and creative workplace culture; to develop and share associated best practice. Following relocation into a redesigned physical workplace, with a high level of leadership involvement, the original participants in this project self-reported improvements in productivity. The staff visibly displayed positive attitudes in support of the success of the project objectives. Staff welcomed the reduction of perceived levels of organisation hierarchy through acceptance of the removal of artefacts of hierarchy, such as individual offices, from the physical environment.

The original users of WotF were not involved in the design process, but were kept informed of progress during the fit out of the workplace and as a consequence, their perception was that they were involved. They had one formal team session in preparation for the move. The users positively accepted the new office design and claimed increases in productivity as a result of their move to the new workplace.

When the Planning and Evaluation team moved to WotF, their level of change was less positive than the original participants. They had met one of their two original objectives, which was to shake off the perceived image that others had of them as being a traditional 'back office' team. However, it could be argued that this was their own perception held of themselves from the outset, as there was never any empirical data to suggest other staff in the organisation held this view. Arguably, it was a feeling the team held about the image they projected to the organisation. Their second objective, to use the new work environment to boost and support their newly redesigned work processes, never materialised – instead they worked in ways that the physical environment was not designed for. For example, staff were working from hot desks in the open plan area when there was a requirement for them to use quiet, confidential workspace. This was because the team were used to sitting together and were still using the new workspace in the same traditional way that they had operated in their old workspace. They had not adopted new workstyles or patterns (chapter 4, p.208).

Planning and Evaluation were not involved in the design of the workplace, however they were heavily involved in preparing for their move into the space. They held several induction and awareness sessions within their team. Despite this acceptance for the move and their involvement in preparation in advance, their perception was that they had no involvement in, or control over the move. The team were unhappy with the workplace design and functionality.

Planning and Evaluation leadership was absent from the process of the change. Just as the staff were preparing for the move to WotF, the two directors leading the team took up new promoted positions in other parts of the organisation. There was a period of six weeks after the team moved to WotF before the former directors were replaced by a new team leader. During this time, there was no guidance or role model for the team to look towards and many spoke of feelings of abandonment. Overall, the feelings and attitudes of staff from the Planning and Evaluation team were negative towards the new work environment. The team was largely introspective, and did not mix or take up the opportunities to interact with others in WotF. They felt that the other teams were different; more mature flexible workers, accustomed to the new work environment (chapter 4, p.206). Unlike the original participants in WotF, there were limited reportings of increases in productivity and levels of satisfaction from the Planning and Evaluation team. The physical environment in WotF was not changed in any way when the Planning and Evaluation team moved in, yet the effects of their move were very different and less positive than the original participants who moved into the WotF environment one-year prior.

Extent of change within FutureSpace

In FutureSpace, the overall objectives were not met, and the staff self-reported that the change experience negatively affected their performance levels. The original stated objectives were: to help the teams contribute effectively to the achievement of their strategy, which would require cross team working; to maximise efficient use of space and IT; and to improve delivery of services to partners and customers. The

creation of the redesigned office maximised efficiencies in the use of space and IT, but the desire to increase synergy across the teams was never realised. Restructuring of teams around the same time as the move was reported to have hindered the opportunity for, and willingness of, staff to increase team synergies. The third objective, to improve delivery of services to customers and partners, was not achieved fully. There was one achievement, which was that customers considered the office design to be a visual improvement. However, staff felt this was superficial, and there was no data revealing changes in the service delivered, or received.

Users were heavily involved in the design process for FutureSpace, where there were task teams established involving users, management and designers. These teams were allocated specific aspects of the design, such as floorplate layout, furniture selection, and storage options. Despite this substantial involvement and participation of users, their perceptions were that they had limited choice and involvement in the decision making aspects related to the move.

In FutureSpace, the leader was absent during the change process – absconded without explanation to staff. Staff's attitudes and feelings towards the project were generally negative; some spoke very unconstructively with other colleagues whilst in the office, and others displayed their bad feelings towards the project by choosing not to come to the office to work.

The design of FutureSpace was very similar to WotF, but the outcome of the project was very different. The strongest force of discontent from FutureSpace was the fact that their leader absconded, yet the leader expected the staff to carry on participating in the new work environment. Many staff reported that they wished FutureSpace could be returned to the way it was before it had been physically redesigned.

Extent of change within Skillspace

In Skillspace, the original stated objectives of the change were: to support the new cultures and values of the team; to encourage behaviour needed to deliver their aims; to showcase good practice in knowledge management; to improve communications and integration within the team. Most of these were achieved within the first six months of the project - particularly support for new cultures and values, and increased communications within the team. There was a relatively limited physical redesign undertaken within Skillspace compared with WotF or Futurespace, due to the constrained budget. However, users were invited to participate in the selection of storage options and furniture, as the floorplate layout had limited opportunity for radical change. All users were invited to participate in the redesign of work processes. Both the actual and perceived involvement was recognised by users. The attitude and feelings of staff towards the change were very positive, and there were self-reported gains in productivity as a direct result of the change.

After six months, when there was an expansion in the team, both the abandonment of many of the new ways of working, and lack of guidance to new staff joining led to erosion of the achievements that had been made in the first six months. Also, the

design of the physical environment alone was not enough to stop this reversion. The work that had been undertaken to achieve the original objectives was now rendered ineffective, and the project became a place in which staff reported feelings of frustration. The original participants felt the benefits they had realised in the first six months were now disappearing, as they watched the space being used in a different, more traditional way, and this in turn led to fragmentation amongst the teams and new barriers to communication emerging.

It is important to note that the design and objectives of the new work environments were relatively consistent throughout all three projects, and yet the outcomes of each project were very different. Some insight into the reasons for these differences has been highlighted in the interpretation of the case findings in chapter 5 (Table 5.1, p.231) and will be included in the discussion in the next section.

6.3 Addressing the Research Objectives

Both research objectives one and two add to the main research subject, which is to contribute to increased understanding of new work environments. This section will take each research objective in turn and discuss it in relation to the outcomes of the data analysis.

Research objective 1

To contribute to increased understanding of the role of the physical design aspects in a new work environment.

The findings of the data analysis regarding the role of the physical environment within the main case and the two sub cases will be presented below, followed by a concluding discussion.

The role of the physical environment in WotF

The physical environment in WotF was purposefully and deterministically redesigned to reflect a new work environment. From the data, it is known that the original teams who moved into the space reported it to have positively contributed to their overall performance. The design was complimented for its openness, which gave staff the opportunity to see what was going on day to day in the workplace. The visibility also gave some staff a feeling of availability, in that they could approach other staff and be approached more easily if desired. These elements can be divided into two broad categories - those contributing to the daily work processes of the teams, and those that cut through the previous 'physical' barriers to communications within the workplace. In both, there was a positive relationship influenced by the physical environment. There were other elements of the design that were complimented for their 'pleasure' to the eye, and those were things like the bold, bright colours. The data highlighted that the colours were also symbols signifying messages – to some staff it was that they were part of something special and different. Other staff believed the colours projected an image of innovation to their customers, both as an organisation and as individuals working within the brightly designed space. The physical environment in WotF can be seen to have the ability to influence social feelings and behaviours.

There were aspects of the physical design that the original teams who moved to WotF commented negatively on, one being that the furniture was chosen for style and not functionality reasons (chapter 4, p.185). Staff, however, readily tolerated this and accepted these aspects as part of the package they had agreed to buy into. In WotF, the physical environment was viewed as a positive catalyst in the change process for the original teams who moved in, but not detached from the relationship with intangible elements.

When Planning and Evaluation team moved to WotF, their experience of the physical environment was very different and less positive. They reported the physical environment to be noisy and distracting. They felt it was a place that eroded their team working ability, because they were not all sitting together each day. The tolerance levels in this team were lower towards aspects of the physical design, and most of them felt it only contributed negatively to their performance. Despite the Planning and Evaluation team feeling negative towards the WotF project, they explicitly said that they would not want to return to their old environment. They viewed the physical environment as a necessary requirement in the process of their change, but were not convinced that the design of the WotF was either appropriate, or the only model. It provided a mechanism for them to specifically change their image. To their customers, they were trying to appear more innovative and forward thinking, and they believed the physical environment in WotF portrayed that better than their previous office space. Here the physical environment was recognised for its ability to contribute 'externally' to the team.

The role of the physical environment in FutureSpace

The physical environment in FutureSpace was reported to be very pleasant and visually attractive. There were some concerns over the functionality of some worksettings, but only minimal objections to this were noted. Overall, the appreciation and tolerance of the physical environment design changes were high. An exception was those individuals who wanted a permanently allocated desk from the outset and were given no choice. They displayed low tolerance levels of the functionality of the physical environment, and were often explicitly talking negatively about this aspect. The physical environment of FutureSpace also displayed products that were leading edge in technology advancement. This was a symbol to their customers that they were involved at the forefront of innovation. This aspect of the physical environment was claimed by some to be superficial, and not truly reflective of the internal operations. The majority of staff in FutureSpace liked the physical environment, but few claimed it made any positive contribution to improving their performance. The staff in FutureSpace viewed the redesign as helpful in the change, but not the driver or catalyst. Within FutureSpace, the physical environment was recognised for its ability to contribute 'externally' to the team. Within the team, its ability to improve productivity was seen as negligible and in the main, it was recognised as a 'hygiene factor' (Herzberg et al, 1959).

The role of the physical environment in Skillspace

In Skillspace, the physical environment was the most modestly redesigned, with less money available for radical redesign. In the first six months, the physical environment was reported to be a valuable 'extra', to complement and support the new team structures it was described as 'the icing on the cake' (Chapter 4, p.235), although it was not viewed deterministically as the driver, or catalyst of the change process. The majority of the office space was redesigned, but there were a few old spaces that remained unchanged, such as the director's office. These symbolised hierarchy. Despite the symbolism, in the first six months, the physical environment was seen to be one ingredient contributing to the support of individuals in their work.

After departmental restructuring, six months later, when new staff came to work in Skillspace, the teams reported that the physical environment was constraining them in their daily work routine, with specific focus on the continual competition for workspace due to inappropriate use of the designed workplace. It was reported that the physical environment was beginning to symbolise different culture and power structures in the workplace, between permanent desk workers and flexible working staff, as new staff took ownership of desks. In this sub-case, the physical environment went from positively underpinning performance in the first six months, to negatively affecting the performance of the teams based there. At this stage the physical environment was viewed as a barrier to productivity, with the ability to affect social elements of the workplace.

Comparison of the role of the physical environment in WotF, FutureSpace and Skillspace

From the data analysed in chapter four, it was found that changes made to the physical environment within the three cases under study were of a similar nature in design principles, such as bright colours, reduced status symbols, and variety of worksettings, albeit to varying degrees. The purpose of the redesign was also deterministic – management in all three projects wanted to use the physical environment for changing social aspects of the workplace. However, the effect the physical redesign of the workplace had on staff was very different. In the WotF, the experience of the physical environment for the original staff who moved there was a very positive one, and staff reported it directly contributed to their productivity and performance levels. When planning and Evaluation moved to WotF they reported it to have negatively affected them. This was strong evidence to demonstrate how one physical design can have multiple psychological meanings, or associated experiences for individuals. In FutureSpace and Skillspace, findings were that the redesign of the physical environment itself was viewed relatively favourably, but made little or no contribution to productivity and performance.

Often in the three projects, the physical design was scapegoated for other factors within the organisation not being to the satisfaction of the workers, such as: failing management styles; when the leader in FutureSpace absconded; the leader in Skillspace retained her own office; the new leader for the Planning and Evaluation team in WotF did not feel comfortable or trust the team to work from home; the lack

of appropriate technologies: the staff in the Planning and Evaluation team being told they could work from home, but neither laptop computers nor ISDN connections were provided. Hence, the physical environment is vulnerable to, and dependent upon other factors being aligned to enable it to make a positive contribution to the organisation.

I propose that the physical environment has a key role in the support of improving organisation performance. However, it can be concluded that it is not deterministic. Emphasis is placed on its role as an integral part of a conceptual model containing both social and physical elements working together to create change and not in a fragmented way. This does not negate its importance. Instead it gives it credit for its ability to contribute to influencing behaviours and actions of individuals within organisations.

Research objective 2 To identify the key elements and their relationships within new work environments.

Although many factors have been identified as relevant in new work environments, two salient factors emerged from the data analysis: leadership/management and informal structures. Respectively, these are discussed for each project below to address the second research objective.

Leadership and informal structures in WotF

In WotF, the leadership of the original teams was very tangibly engaged in, and supportive of, the change process. The two main leaders, although adopting different workstyles to each other, with one remaining predominantly office-based and the other predominantly home-based, using the office only as a place for meetings and updates, had a high influence on their teams' workstyles. Reports indicated that feelings of both increased access to leaders, and a growth in overall respect for leaders were held by staff. It was noted that the leaders were surprised by this, and began to enjoy the pride that their teams had given them. In turn, the teams felt the leaders trusted them, and that they were, hence, empowered to choose new workstyles based on their tasks. In reality, despite the leaders adopting autonomous styles of management, most staff chose a pattern of work that reflected that of their leader, arguably seeing them as role models.

When Planning and Evaluation moved to WotF, and their leadership was absent for a period of six weeks, the data showed that there was a loss of sense of direction for the team at the time they were seeking it. Pre-move briefings were held with the team and the leaders, focusing on the new ways of working. Despite this preparation, the team were looking for someone to set them an example, or provide direction, almost to provide formal approval to proceed with new ways of working, which never happened. This left the team feeling a sense of despair, while being surrounded by experienced flexible workers in WotF. This alienated Planning and Evaluation from the other teams, strengthened the inter-team bond and 'group-think'

(Janis, 1982), and created an informal structure in the absence of an official leadership structure. They became reliant upon each other for information about WotF and, hence, as their experience was limited within their team, as a result, limited their innovation in practising new ways of working

The new leader for the Planning and Evaluation team had not been involved in the preparation for the move to WotF, and was less engaged with the project objectives and aspirations of the team. In addition, the new leader had fresh ideas, wanted to get to know the team, and favoured a more traditional presence of the team in the office. This was different to the teams expectations of flexible working. Instead of discussing this openly, the new leader imposed the old way, indirectly, by not providing the appropriate tools, such as laptops, to enable work outwith the office. The outcome of this meant that trust and respect were undermined between the team and management. As the new leader had not taken account of the appropriate use of the physical design, it was effectively misused. This behaviour and action of the leader symbolised control to staff.

There was an effect of this on office functionality. As the leader of the Planning and Evaluation team expected staff to be present in the office, they were using bookable worksettings in a permanent way, thereby reducing availability for other flexible workers. Here, the impact of exercise of power by the leader was underestimated, and produced unintentional outcomes and impacts upon the project. The informal structure within the team became ever-more strengthened, and together the team

were united against both the perceived constraints of the physical environment, and the leadership rhetoric.

Leadership and Informal Structures in FutureSpace

In FutureSpace, the leadership abstained from active participation in the change process. Having been involved in setting the original objectives of the project, deciding to redesign the office space and change the workpatterns of the teams based there, the leader then chose not to participate. The reasons why were never explained to staff, and hence, the perceptions and assumptions that it was too tough for the leader to give up the status symbols of hierarchy were, arguably, reality. From the outset, this action negatively affected the mood and success of the project. Despite user involvement via task teams, some staff felt bitter that they had not been given choices – choices about whether to participate in the project when the leader choose to opt out, or choices over work patterns or design elements within the project, such as the choice to be either a permanent or flexible worker. Whatever the reason for the bitterness or discontent, there was an informal structure that developed, which held negative reactions toward official structure of both the project and the leader. Amongst peers, there was very little evidence in the data of positive discussion about ideas or opportunities to make things better, or try out new ways. The strength of this informal structure ‘group-think’ (Janis, 1982) was very powerful in restraining change within the project.

Leadership and Informal Structures in Skillspace

In Skillspace, the leader choose to opt out of working flexibly, but reasons were discussed and offered to staff by way of explanation. The leader suggested that financial constraints and the need for privacy made it sensible to retain the physical structure of her office. In an effort to make a contribution, and to provide practical demonstration of example setting, the leader adopted policies such as a clear desk, and encouraging others to book her office when she was out. Unlike Futurespace, where the leader absconded and provided no explanation to the teams as to why, the leader in Skillspace explicitly discussed the situation, and attempted to provide justification of her actions to her team. Although there was an element of rhetoric that staff recognised in the justification provided, it seemed that, as this was openly discussed and some attempts were made by the leader to compensate, there was a higher level of tolerance displayed by staff. Hence, there was limited detrimental effect on the project and staff were willing to continue to positively participate in the Skillspace project.

At the initial stage, there was support from all staff and management, and informal structures were minimal, or concordant with the formal structure. Users were invited to participate in the initial design phase in the selection of items such as furniture, storage, colour schemes and to a certain extent the physical location of work-settings, although this was constrained by spatial limitations.

When, after six months, the staffing numbers in Skillpace almost doubled in size due to restructuring, new management joined the team and brought a traditional workpattern with them. The staff turned to the leader for intervention and reinforcement of the objectives of the project and workplace values. Direction and enforcement never materialised from the leader. There was a resistance towards the new management and an emergence of informal structures.

Unlike FutureSpace, which was predominantly one large informal structure with a generic negative feeling towards the project, Skillspace saw the emergence of several informal structures. One consisted of staff who were angry and resistant towards the newcomers, whom they believed did not understand how the workplace was designed to function. Another was developing amongst the new staff, who were trying to work the way they were accustomed to, and deliver results early on in their new roles, but meeting much resistance from other colleagues. In Skillspace, leadership intervention was called for, but never actioned. This was reflective of the conflicting demands that each of the informal structures was making of the leader, who found it difficult to meet them all, and reverted to suggesting that the staff should be more empowered and self-managing, and work things out for themselves in the new environment.

In Skillspace, the informal structures were fragmented, and not as powerful as those in FutureSpace, or the Planning and Evaluation teams. However, collectively, the effect they had on the Skillspace project was very negative.

Comparison of Leadership and Informal Structures in WotF, FutureSpace and Skillspace

Overall, in the three projects, the power of leadership was very strong, but not always recognised, or used to the benefit of the change. It was also often misunderstood, and affected many of the day-to-day operational activities of staff. There was a desire from staff in all three projects to see the leaders participating and leading by example, and to provide direction. In WotF this was implicit in some teams. For example, the New Ventures team followed the workpatterns of the leader but did not explicitly talk about this. The Planning and Evaluation team talked explicitly about the lack of guidance they had from their leaders who 'abandoned' them. In Skillspace, when the new members joined, who were not working in a flexible way or making best use of the office space, the original staff looked to the leader to provide guidance and direction to the newcomers, but the leader did not respond to the call and frustration / resentment amongst staff was reported in the data (chapter 4, p.224).

In summary, where guiding leadership was evident - WotF original staff and Skillspace original staff - the levels of participation and enthusiasm were very high and because of the presence of leadership as the official formal structure, there appeared to be little or no informal structures emerging. Where the power of the leader was not used to provide support, direction and participation – FutureSpace and the Planning and Evaluation team - the informal structures and 'group-think' (Janis, 1982) materialised. These were emergent in the face of the lack of official formal

structure. In all cases, when present, informal structures diverted attention and resources away from either the strategic objectives of the project or the individual's performance and, arguably, constrained the potential for development of the projects and contribution to organisation effectiveness. Where there was lack of evidence of leadership, whether directional or inspirational, the findings on informal structure concur with the literature (Janis, 1982, p.12) discussions that state:

“...not all group-think situations are harmful or inefficient. However, they can often limit innovation and development due to the psychological pressures that arise when the members work closely together, share the same values and above all face a crisis situation in which everyone is subjected to stresses that generate a strong need for affiliation”.

6.4 Conclusions of the Research Objectives and Explanation Building

The conclusions of the research objectives will now be considered in detail.

Although this thesis has distinguished between the two research objectives thus far, from this stage onwards the boundaries between research objective 1 and research objective 2 are fluid, to allow a conceptual level discussion focused on the overall aim of contributing to an increased understanding of new work environments.

By understanding new work environments conceptually, actions taken to change one element will be more informed about, and by reactions in other elements. The research objectives have shown that the physical and social environments of work cannot be taken as discrete and viewed separately, and indeed, when viewed together

more elements for consideration emerge. One such element is the point of entry to the change process, which is now seen as crucial to the role that the physical environment will be able to play within organisations. Depending upon where intervention is made by the organisation, the physical environment can take on a different role – as an enabler or a barrier. It was shown in the data (Table 4.8, p.205) that, in the WotF case, the physical environment was viewed by the original staff as an enabler, and had a positive influence on their work. However, when a new team moved into WotF, with a management style and technologies that were not aligned to the new work environment, the physical environment was viewed as either a barrier to, or a negative influencer in their daily productive working.

In FutureSpace, there had been no alignment of the social aspects, such as supportive leadership, or gaining positive attitudes and buy-in to the change. Hence, when the physical environment was re-designed, staff felt it had been imposed upon them, and they reported it as having a negative effect on their work. The physical design of FutureSpace was not dissimilar to WotF, but the key difference between the two projects was that, at the point of entry to change in the tangible elements, when the original staff moved, the intangible elements in WotF were aligned, and in FutureSpace they were not. This resulted in the impact of the physical environment being seen as an enabler in WotF and a barrier in FutureSpace.

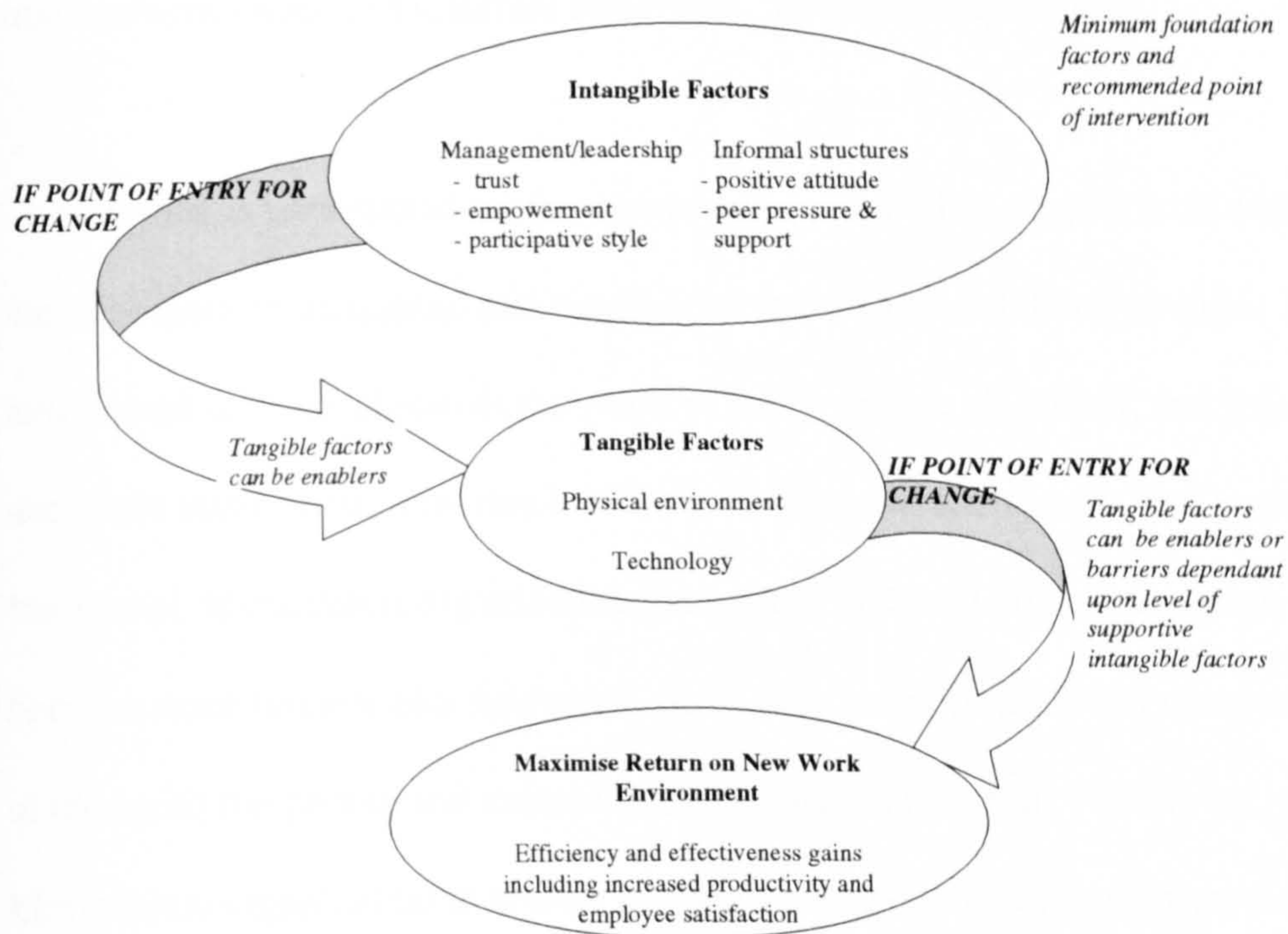
In Skillspace, as mentioned above for WotF, the original participants viewed the physical environment as an enabler to their work productivity. At the outset, the intangible elements, such as leadership and positive attitudes towards the change,

were aligned. Six months later, when the new staff joined Skillspace and the intangible elements changed – with a loss of leadership and breakdown of informal structures of trust and empowerment – attitudes became less positive, and the physical environment was then reported as a barrier to work productivity. Skillspace findings illustrate how one physical environment can, at different stages in time, with the only change being to the intangible elements, be both an enabler and a barrier.

Tangible elements – such as the physical environment and technology – and intangible elements – such as leadership and informal structures – have been identified as major categories contributing to understanding new work environments. The conceptual consideration of these elements introduces additional factors such as the timing or point of entry for change which can be critical to the impact of the process.

An holistic conceptualisation emerged from the data analysis, that summarises the findings of the case study, as shown in Figure 6.1. This model displays both the tangible and intangible elements that are present within new work environments, and conceptualises relationships and dependencies between them, based upon discussion of the SE cases.

Figure 6.1



As illustrated in the model (Figure 6.1) above, intervention at different points can lead to the elements assuming different roles and to a single physical reality being perceived within multiple social situations. For example, if an organisation attempts to redesign its workspace by introducing a new internal fit out to the office environment and some new technology, then they are entering the model at a point where the focus is on tangible factors. As a consequence, it is not appropriate to assume all the intangible factors at the foundation level are in support of that point of intervention. If they are not, then it is uncertain the benefits of intervention will be realised. In this situation, the physical environment may be viewed as a barrier, or negative factor by staff.

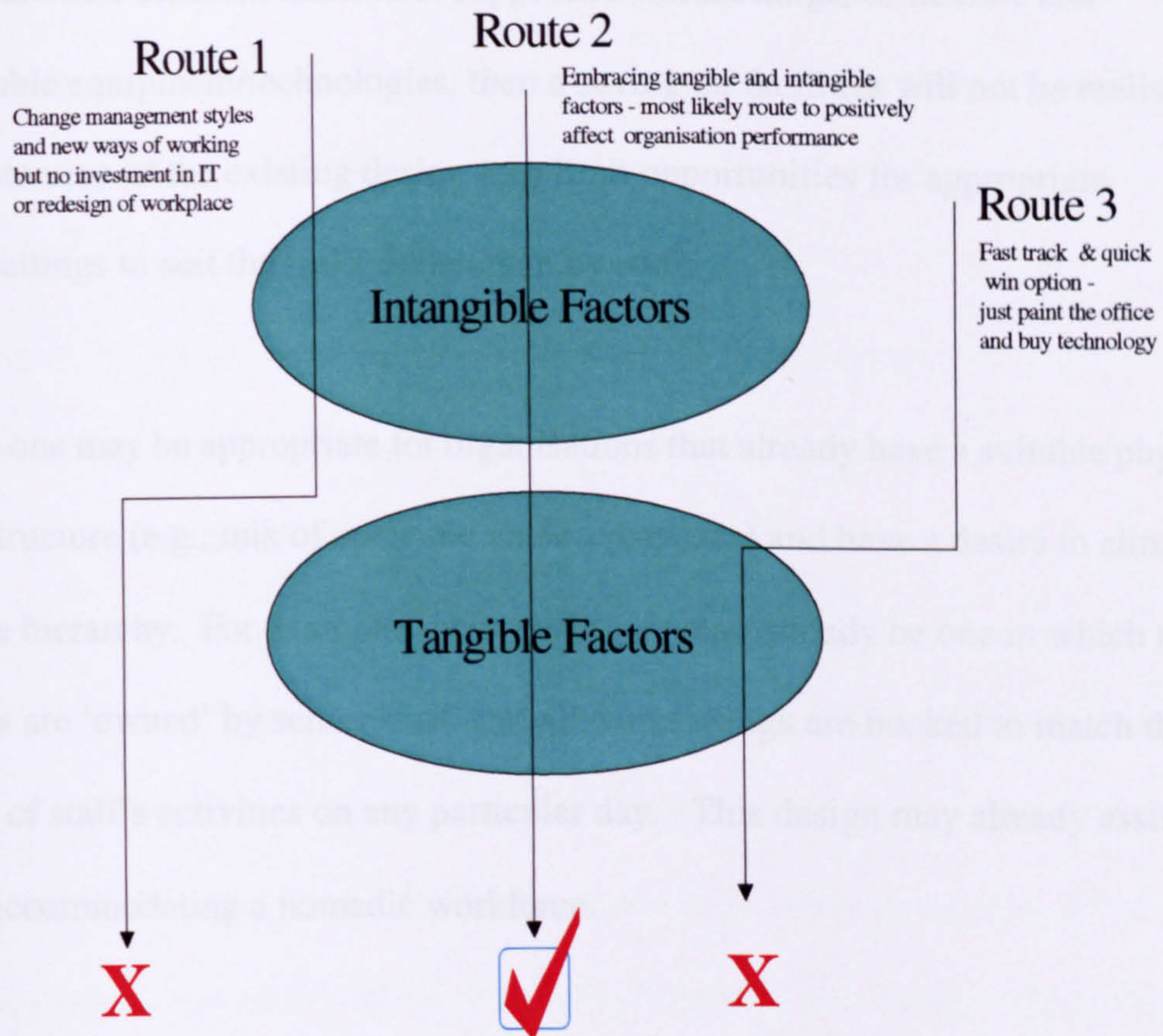
Conversely, entry at the point of the tangible factors, such as redesigning the physical environment, may be sufficient to obtain increases in productivity and

improvements in organisation performance if the intangible elements, such as management styles and informal structures, are positively aligned.

The key lies in understanding the organisation, and what stage it is at with respect to the alignment of intangible and tangible elements to the desired change. From an assessment of these elements the point of entry can be identified, and informed decisions taken about how much effort is required at each level. For instance, in a traditional, hierarchical organisation that wants to change its organisation structure to become more flexible and delayered, there may be more time and resources targeted at changing the people and culture than the physical design. However, a traditional hierarchical organisation that does not want to change its organisation structure and reduce hierarchy or bureaucracy, may only invest in changes to the physical infrastructure.

For other organisations, such as delayered, de-bureaucratic, or matrix structured, the focus may be different again, perhaps with less emphasis placed on the social aspects, as these organisations may be more aligned to participative management styles, empowerment and flexible workpatterns already. Therefore, the focus might be on redesigning the physical environment to support the organisation structure. Figure 6.2 below is built on what has been discussed in order to provide guiding suggestions regarding effective routes for success in implementing change to, or experience gained from, new work environments.

Figure 6.2



Route 1 Address the Intangible Factors Only

In this route the organisation focuses on changing the intangible factors, such as management styles to become more participative and empowering, workpatterns of staff to become flexible with choices over where to work – may include alternative locations such as home and flexibility in timings of work, not necessarily a typical 9-5 routine. It does not invest in new, appropriate technology, or attempt to redesign the physical infrastructure. Unless the physical infrastructure and IT are already supportive, then it is unlikely that full, if any benefits will materialise from this change. For example, if no laptops are provided, then staff may question the reality of management rhetoric in giving choices and empowerment to individuals

over locations and autonomy of working practices. If the office design does not accommodate different choices of supportive worksettings, or flexible and adaptable equipment/technologies, then a saving on facilities will not be realised, and retention of the existing design may limit opportunities for appropriate worksettings to suit the tasks undertaken by staff.

Route one may be appropriate for organisations that already have a suitable physical infrastructure (e.g., mix of open and enclosed spaces) and have a desire to eliminate visible hierarchy. For example, their workplace may already be one in which no offices are 'owned' by senior staff, and all worksettings are booked to match the needs of staff's activities on any particular day. This design may already assist with accommodating a nomadic workforce.

Route 3 Address the Tangible Factors Only

This route is often perceived as the one for the quickest return. Often organisations redesign their physical environments and provide staff with laptops, thinking the benefits of increased productivity will automatically materialise, which this thesis has shown will not necessarily happen. On occasion, this may be an appropriate route for organisations that are confident they have supportive intangible factors in place, such as supportive management styles, and a mature workforce in terms of empowerment, flexibility and autonomy, but where their physical environment and technology are in need of upgrading to support their new workstyles. For example, they may need to undertake team-based working, or knowledge sharing sessions to help innovation or project working day-to-day, but their accommodation is designed

with cellular offices that do not allow any sharing of spaces, or opportunities for teams to work together. In this situation, unless the physical environment is redesigned, and appropriate technologies provided, the physical environment may be viewed as a straightjacket by staff.

Route 2 Address both the Tangible and Intangible Factors

This route is proposed as being most appropriate for organisations that wish to change from both traditional work patterns, and from environments that accommodate status symbols reflecting hierarchy. As the workstyles of staff change over time, the physical environment and IT do not always change at the same pace. Therefore, in this route, tangible and intangible factors are aligned. In certain situations there can be a deliberate attempt by management to use the redesign of a physical environment to change behaviours or culture within the organisation, but this can be interpreted by staff as merely a cost cutting exercise. Route 2 is the recommended option to take to ensure appropriate and holistic consideration of all factors and of their dependencies upon each other, in order to maximise the opportunities for increased organisational effectiveness.

In this route, an organisation would make changes to the tangible factors such as the physical environment by reducing symbols of hierarchy such as dedicated offices, and would increase choices of worksettings appropriate to the tasks performed by staff, for example, a choice of worksettings including short stay, long stay, quiet concentration spaces and interactive social spaces. IT provision would be made to enable staff to make full use of all worksettings and locations that they could work from. However, in considering the alignment of the intangible factors whilst making

changes to the tangible factors, a change programme to support managers in trusting and empowering their staff may be required, and management support to individuals may be provided to aid their transition through the change in the new work environment. Such support for staff may involve practical advice on flexible working – how to plan and organise work if you are moving around a variety of worksettings or locations, how to keep in touch and ensure the appropriate level of communications with your team, how to balance organisation and personal time and utilise appropriate spaces for tasks outwith the workplace to manage the home and work-life agenda.

As shown in the discussions above, there is a strong emphasis on understanding the organisation's situation before change to a new work environment should occur.

Intentions and actions are important in understanding new work environments.

Often they are explicit to some, such as management, but not always to staff. Whilst routes 1 and 3 above may appear attractive to organisations, on the basis of speed of implementation and/or cost of change, route 2 is the recommended route to achieve the optimum level of sustainable success in change to a new work environment.

By giving integrated consideration to all tangible and intangible factors at the same time – as proposed in route 2 - for alignment, organisations may avoid unnecessary costs and negative responses from staff to intended supportive change. A simple example, an organisation might introduce a new telephony or PC system one year, which is intended to support staff and organisation effectiveness, but which is based on the workstyle of staff being traditionally office based. The following year, a new

flexible working policy may be introduced, which encourages staff to work from alternative locations. The cost of upgrading, or changing the system to support flexible workers with laptops or mobile telephony would be expensive, and may even prevent the change from occurring. However, such supportive, but non-integrated change may leave staff questioning the organisation's seriousness of its intention to change and of its intention to be supportive and empowering of the individual. This reinforces the importance of the physical environment change being viewed as part of a process and not a singular or isolated event.

6.4.1 Summary Conclusion of the Research Problem

By demonstrating the complexities of, and relationships between the components within new work environments, the combined findings from the two research objectives, as discussed in section 6.4, have responded to the main research problem of contributing to an increased understanding of new work environments.

It emerged from the data that, whilst the physical environment could have a very positive effect in new work environments, this was dependant upon other factors to be in place to make it so - predominantly intangible, or social factors. If these were aligned, then the physical environment could make a substantial contribution to overall increases in productivity. However, if organisations attempted to positively improve organisation performance through redesigning the physical environment

alone, this would not guarantee success. The physical and social aspects cannot be separated, or viewed independently in the change process.

The role of the physical environment in each change process will be context dependant, therefore, it can be one of the contributors to successful change in a new work environment, but it may assume a different role for each organisation.

Regardless of the specific context of each situation that organisations may have to consider, the physical environment must be viewed as an integral element of a system in order to maximise the impact it can make. There are many tangible and intangible factors contributing to understanding the system in new work environments, some of which are only visible or understood when viewing the workplace in totality, or conceptually. They embrace both the social and physical factors, have dependencies and relationships across each, and create new elements when viewed conceptually.

So far, this chapter has presented a discussion of the key findings from the case study in section 6.4. Exploration of the main research problem – increasing understanding of new work environments – has been addressed through the two research objectives, and an explanation of emerging theory, and increased understanding has been achieved. The next section will re-engage with the literature and present the main conclusion of the thesis.

6.5 Revisiting the Literature and Contribution to Knowledge

The findings from the previous section and the literature reviewed in chapter two are used to present the closing argument of the thesis. In chapter two, the main gap in the literature was identified. It was that there is limited complex and holistic understanding of new work environments in organisations. More specifically, the conclusion was that there is a lack of convergent understanding of the role of the physical environment and its relationship to social and organisational factors within the wider workplace context. After reflecting upon the findings of the data analysis, it is timely to present a re-engagement with the relevant aspects of the literature.

Reflecting on the role of the physical environment

Considering, firstly, the role of the physical environment; the principal argument of this research is that **the role of the physical environment is not deterministic**, and by itself it is not able to bring about positive changes in organisation performance. In current management and organisation theory (Carnevale; 1995, Hatch, 1997; Gaudes, 1999) the constitution and impact of the physical environment is still said to be narrowly understood, specifically with regard to the contribution that it makes to increased productivity or overall organisation performance in new work environments (Sundstrom, 1986). It is proposed in the built environment literature, that the physical environment is a catalyst for change in organisations (Laing, 1993; Becker and Steele, 1995; Duffy, 1997; Laing et al, 1998; Turner and Myerson, 1998) and some writers have claimed that it is deterministic of behaviours in

organisations (Canter, 1974; Hillier and Hanson, 1984; Dovey, 1999). Through the data analysed in the main case study, WotF, this thesis has provided empirical evidence to demonstrate that the influencing ability of the physical environment is context dependant. With certain givens at the level of the intangible, organisation environment, the physical environment is able to contribute positively to organisation performance. However, from the analysis, there was substantial evidence to confirm that the provision of a new physical work environment is not, in itself, a sufficient catalyst of change to invoke increases in productivity or organisation performance. It can also be a barrier, or negative factor in change, if other component elements are not aligned. It is a mix of elements working together that creates opportunities for the physical environment to be used to actively influence change. Those elements, when viewed conceptually, create additional important factors for consideration, such as the importance of the point of entry into the process of change, as detailed in section 6.4, Figure 6.1. From the empirical data, concluding that **the concept of the physical environment as a discrete and independent catalyst for change is rejected.**

The findings from the data show that **the physical environment can be both a hygiene factor and a motivator.** This challenges the humanistic theories of Maslow's (1954) need-hierarchy and Herzberg et al's (1959) hygiene theory, in both of which, the physical environment was recognised as an element that satisfied basic human needs or, at most, prevented dissatisfaction. Neither Maslow (1954) nor Herzberg et al (1959) gave credit to the ability of the physical environment to make any positive contribution to increased satisfaction or productivity of individuals, and

hence gave no recognition to the notion of the physical environment as a positive element in the system. However, Herzberg's theory of motivation / hygiene factors is to some extent supported in the findings of this research. Within certain situations, the physical environment was found to be a hygiene factor, and was taken for granted by staff. However, an equally important opposing viewpoint from the data analysed in this thesis is that altering the physical environment with re-design - embracing factors like strong colours, reducing visible status symbols - can play a salient role in contributing to individuals' motivation and to improving organisation performance. Although the social aspects were highlighted as the main factor in ensuring successful change in new work environments, once these are aligned **the physical environment can bring an additional level of increased motivation.** Evidence of such was gained in the case study, the first stage of the WotF project (Chapter 4, p.179 & 193), where the management styles were participative and empowering before the move to the new environment. When the changes to the physical design were undertaken and staff moved in, they self-reported significant improvements in their productivity levels (Table 4.1, p.170) as a consequence of the change in the physical environment.

The evidence of WotF indicates that there is a boundary between the motivators (Maslow, 1954) and hygiene factors (Herzberg et al, 1959) that is less precise than humanistic theories suggest. **It has been demonstrated that, within a single manifestation, the physical environment has the ability to cross the boundary between being a hygiene factor and motivator in specific contexts.** The physical environment contributes to, and assumes multiple roles in new work environments,

dependant upon the relationship between the work environment and the wider organisation system.

Consider other Elements of New Work Environments

Changing Workpatterns and Workstyles

Considering, secondly, other elements within new work environments, an important aspect that was conclusively drawn from the findings of the data was the **importance of social or intangible factors such as flexible working and choices over workstyles generally for individuals.** These findings challenge the classical theories (Taylor, 1911, Weber, 1947) that neglected the importance of the social or intangible factors. The findings, however, are congruent with the liberation theory literature (Toffler, 1980; Schiff, 1983; Handy, 1995; Varcoe, 1995; Murphy, 1996; Apgar, 1998), which states the importance of new found freedom and flexibility for individuals in new work environments. Liberation theory argues that flexibility in workstyle is more influential in achieving positive change and increased productivity than can be achieved by merely redesigning the physical environment.

Corroborating data was gained for the liberation theory by the lack of contrary evidence in support of the new age 'Dickensian sweated labour' (Huws, 1996; Thompson and Warhurst, 1998; Wilkinson, 1998) propositions. There was no evidence to suggest that any staff participating in the three projects felt subject to modern sweat shop workstyles. Neither were there feelings of alienation caused by physical distance and detachment through the new flexible workpatterns, as

proposed by some authors (e.g. Blauner, 1964; Braverman, 1974; Handy, 1995). It is possible that no feelings of alienation of this form were experienced by staff because they never permanently worked from home, or away from the office – instead, they had a balance of office, home and mobile working.

It is possible to consider that the informal structures that emerged in the workplace were in response to a form of alienation, however these discussions in the literature (Braverman, 1974; Handy, 1995; Huws, 1996) tended to focus on individuals who were based in remote locations distanced from the main office. They also neglected to consider that, when all the team are participating and displaced in new work practices, the effect is not as dramatic as it would be on one individual undertaking these new workpatterns without any other team members participating.

The data in this thesis demonstrated that the influence team members had on each other, to encourage the uptake and acceptance of flexible working, was high. As discussed in chapter 4 (p.195), the workpatterns of the staff in the New Ventures team appeared to reflect the pattern of the team leader, who worked mainly from home or out of office locations. He also encouraged his team to apply a similar workpattern, and the data (p.177) gathered showed that his team members valued the opportunity to work this way, and reported no feelings of alienation. Often, new patterns of team communications emerge, such as electronic communications via laptop and telephones when out of the office, along with formalised, or arranged meetings to come together in the office. Some of these changing patterns within the

team were experienced by the New Ventures team (chapter 4, p.176), albeit arguably driven by the actions of the leader.

The role of leadership/management

It was proposed that leaders have more symbolic power than they realise, and less control over their interpretations than they desire (Soja, 1989). Discussions in the literature (e.g. Kanter, 1989; Tulgan, 1998; Cairns and Beech, 1999a; Cairns, 2002) about complexities and / or diversities within individuals in organisations suggest both management and individuals have to work together for the success of the organisation. From the analysis of the data, **there was an overwhelming demonstration of the symbolic power of the leaders.** Those leaders who participated in change (e.g. WotF), had associated symbols attached by staff including; their involvement symbolised their support for the team, and that they were in it with them; their trust in the team to work in new ways with freedom of choice; their ability to participate; their openness and accessibility; their innovation. The actions of the leaders were interpreted in many ways, however, and symbolised different messages or perceptions to each member of staff. In FutureSpace, and the Planning and Evaluation team within WotF, the leaders who abstained from participating in the move to the new work environment affected the change in such a way that the staff held the office to be a symbol; a place associated with neglect and abandonment. For others in SkillSpace, the limited action of the leader in providing direction symbolised the leader's weakness in staff's view (Chapter 4,

p.224-226). **The power of action, intentional or not, to symbolise and lead to interpretation was very strongly revealed in this research.**

Leadership had a very powerful role to play in influencing changes within the case study. In all three projects the leaders underestimated, or were unaware of their symbolic power. It is worth noting that, when one leader became cognisant of actions positively influencing staff participation, and in turn increasing respect gained, it encouraged him to progress flexible working a little further still, thereby creating a positive cycle of participation and recognition.

Leadership has been confirmed as a crucial element in successful change to a new work environment. More importantly, the leadership style should be participative (Argyris, 1957; Vroom, 1960; Mowday et al, 1982; Kanter, 1983; McGregor, 1987; Ribbens, 1996; Forester, 1989). This finding is supportive of the management thinking, that **empowerment, participative management and trusting employees can contribute greatly to organisation performance, and can often outweigh the influence of the physical environment** (McGregor, 1987; Kanter, 1989; Drucker, 1993; Handy, 1995).

The process of change

In the process of change to the workplace, there was an awareness (e.g. Pfeffer, 1982; Grimshaw, 1999; Cairns, 2002) that most models offered in the literature were too simplistic (e.g. Bradley and Osborne, 1998; Duffy, 1997; Blyth and Worthington,

2001), and there was a need to seek wider understanding, rather than to identify cause and effect relationships. More specifically, the literature reviewed in chapter two of this thesis set the challenge to view both the physical and social aspects of new work environments together. It required more than the integration of components as the current literature emphasised (Becker, 1981; Becker and Steele, 1995; Thomson and Warhurst, 1998; Neef, 1999). It called for more complex (Cairns, 2002) and conceptual (Bertalanffy, 1950; Boulding, 1956; Weick, 1969; Grimshaw, 1999) understanding of the dependencies and relationships between all elements. **It has been demonstrated in this thesis that the social elements play a key role in the contribution that the physical environment can make in organisation change.**

It was suggested (Davis, 1984; Pfeffer, 1981; Strati, 1999; Gagliardi, 1992) that, if the organisation is treated as a subject to be appreciated and understood - valuing aesthetics and culture – a deeper and more meaningful insight would be gained. The findings of the research have uncovered the power and importance of elements, such as status symbols, noise as a symbol in the workplace, and colours signifying multiple meanings to individuals. The feelings and attitudes of staff towards change were key signals in the research that contributed a wealth of ideas and insight to the knowledge gained.

The literature reviewed to inform this thesis highlighted the importance of user involvement in the design and implementation of change in the workplace (Forester, 1989). The focus on levels of involvement was discussed with some (e.g., Duffy,

1995; Duffy, 1999; Laing, 1998) concentrating on an hierarchical involvement of the top management and designers. Others (e.g., Becker and Steele, 1995) suggested a more functionally selective approach by advocating the involvement of management, user representatives and designers. Other (e.g., Kanter, 1983; Kotter, 1995; Morris and Raben, 1995; Ribbens, 1996; Nadler, 1998; Kurtzman, 1998) advocated management should lead by example, encouraging users to adopt behaviours and influencing acceptance of the desired change. Finally, there was a call from Cairns (2002) for 'real' involvement across all levels of the organisation as the most appropriate approach to influence users acceptance of changes in the workplace.

This research has shown that despite the 'real' levels of involvement, users' perceptions are more likely to affect their acceptance of the changes. As demonstrated, the users of FutureSpace and Skillspace were practically involved in the design and implementation of the changes, but their acceptance and satisfaction with the changes were lower than the users in the main case, WotF, whose original residents had no 'real' involvement in the design or implementation, yet their acceptance and satisfaction of the changes were higher. Their perception of their involvement in the process was also higher than the reality of their involvement.

This research supports the argument that the demarcation between the physical environment and social factors is not as clear, as classical (Taylor, 1911; Weber, 1947; Fayol, 1949) and humanistic theorists (Homans, 1950; Maslow, 1954; Herzberg, 1959) have indicated. Systems theories (e.g. Trist and Bamforth, 1951) underestimate the fluidity of boundaries between the social and technological aspects

of the workplace. In the summary of the literature reviewed in understanding new work environments, it was identified that the conceptual understanding of people, process and physical factors was important to making a contribution to positively influence change in organisations (Becker and Steele, 1995; Vischer 1996; Laing et al 1998). However, there is currently a **lack of research and empirical evidence** used to support this model in the current literature discussions, and it is believed to be limited in explanation.

Findings from the research indicate that explanations in the literature available are insufficient to provide general breadth and depth of understanding of the complexities of the workplace. This thesis has shown that **when tangible and intangible elements are viewed together conceptually, greater understanding is achieved, that could not be achieved when these elements are considered individually.** Hence, these findings conclude that the **current thinking and models are too narrowly-focused, and that they do not extend themselves to offer an explanation of the relationships and dependencies between tangible and intangible, and individual and organisational elements at a conceptual level.**

In summary, the main findings of the research **undertaken in assessing the role and contribution of new workplace environments within Scottish Enterprise and relating this to a range of theoretical perspectives from the literature are:**

- The physical environment, in isolation, is not deterministic, but can play a role in affecting performance both positively and negatively within a new work environment.

- Users' perceptions of and response to the physical environment are affected by a series of factors and, if they are to be fully understood, a complex understanding of both tangible and intangible perspectives must be adopted. This embraces the notion that study of the workplace of organisations should include mutual consideration of the physical (tangible) and social (intangible) elements which cannot be integrated, separated or fragmented. This thesis has demonstrated that a conceptual level of investigation is crucial to discover and create new elements within new work environments.
- The physical environment can be both a hygiene factor and a motivator within a single manifestation, with the ability to cross the boundary between both, previously not recognised in empirical research.
- At an individual level, the social (intangible) elements of the workplace, such as flexible working, leadership and peer influence, outweigh the importance of the physical (tangible) elements.
- Actual user involvement in the process of change is not as important as the perceived level of user involvement with respect to retrospective sense-making and acceptance or rejection of change.

Overall, this thesis contributes to a complex understanding of new forms of ICT-supported work environments, and within that context, the ability of the physical environment to contribute to individual and organisation performance. It identifies different elements of the workplace, across various levels of the organisation and examines the relationship between them, supported by empirical data over time. This longitudinal empirical study of new workplace environments in the

organizational context contributes to the building of the 'bridge' between social and physical science perspectives on the workplace that several contemporary writers on new work environments (e.g., Becker and Steele, 1995; Duffy, 1997; Grimshaw and Cairns, 2000; Duffy, 2000; Becker and Sims, 2001) have begun within the study of organisations and of organisation theory.

6.6 Implications and Conclusions

6.6.1 Implications for Further Research

This thesis does not provide a simple answer to the question of the importance of the physical environment, but it does confirm that it plays a key role in new work environments, and identifies more linkages and dependencies than previous research findings. Therefore, this work is a contributor to, and supportive of, the arguments in favour of the notion of complexity and diversity within and around the role of the physical environment. In addition, it is strongly advocative of viewing a new work environment system conceptually as being the most appropriate way to advance research.

The in-depth case study approach provided a wealth of insight and opportunity for data gathering, however the need for cross-industry, or mixed organisation types is suggested for further research development. This would test development in Figures 6.1 and 6.2 that outline the various effects that may be experienced by organisations,

dependant upon their specific approach and structure. Intra-organisation study (as is the case in this thesis) does offer multiple reality checks and demonstrates that even within one organisation experiences are varied. However, cross-industry experiences are recommended to build on these ideas, but not at the expense of obtaining a longitudinal and in-depth case study. Therefore, it would be recommended to identify other parties to parallel research studies with, to ensure multiple cases and in-depth analysis research could be achieved simultaneously. Due to time restrictions and access to organisations, more than one researcher would be required.

The timescales of achieving more ambitious objectives of understanding new work environments and the noted complexity of change programmes; such as impacts on organisational culture change, or identifying specific contribution to organisation performance; are longer than the duration of this PhD research. To fully understand performance trends and sustainability of change effects, business performance requires to be measured over time, yet conversely it can be argued, where organisations are changing fast, information collected soon ceases to be relevant. Despite recognising the limitations, it is still believed that there is a rich untapped arena for conducting further research into understanding new work environments that would advance organisation theory.

6.6.2 Practical Implications and Personal Reflections

The theoretical insight gained in academia from research such as this PhD is often criticised for its lack of relevance, or suitability to practice. From the outset, the

intention was to draw academic theory closer to current practice, to inform both parties through this research. The discussion to follow will demonstrate the practical implications of this work.

Whilst undertaking the research for this PhD and creation of the thesis, I was engaged in practice within the host organisation. I recognise that at the outset of this research I was, in essence, an agent of the organisation charged with providing evidence that the new work environment layouts within SE would be deterministic, and that by implementing changes to the physical design this would automatically change the behaviour and culture of staff working therein. As I undertook my research, I began to challenge the evidence and my own beliefs about the simplicity of the views that were held in the early stages. Over time, through my practical involvement within the organisation, I uncovered conflicting evidence to demonstrate that the new layouts were not deterministic, and that there was a necessity to increase interpretation and understanding of the complexities at play within the new work environments.

Although a formal source of action research is not documented or used to guide the investigation in this thesis, as had once been considered, it has been an informal part of the PhD process. The knowledge gained from the empirical research and theoretical insight of this PhD research informed me in the process of designing and implementing a change programme to move 700 staff to a new work environment, reflecting the design concept and original objectives of the main case, WotF, in this

thesis. The move to the new work environment took place in the fourth year of the PhD process, and was timeous for learning to be applied into the organisation setting.

More specifically, I was able to work with teams (made up of the 700 staff) and explore with them their starting point before the move. This was informed by consideration of the point of intervention to the change process, as discussed in section 6.4 of this chapter. For example, what levels of supportive leadership, appropriate technologies, experience in flexible working, and hierarchical symbols, were present within the teams. From this assessment point, individual change programmes were designed for each team to assist with the transition to the new work environment. Where fundamental issues were highlighted, such as the lack of leadership in the team, or even, in certain circumstances, the leadership opposing change, additional effort was focused on working with those teams and leaders to break down the barriers and support them in an attempt to engage their positive buy-in. The ability to transcend the assessment of each team to a conceptual level was very effective.

As the research in this thesis has shown, many of the reasons for success, or not, in moving to new work environments depend upon the attitudes and willingness of staff. This stems from feelings and emotions about the change and is grounded in interpretation of the intentions and actions of others. This was highlighted to the organisation as a priority consideration for addressing.

A further demonstration of the practical support this PhD has offered is through sharing the experiences of the projects and findings of the research with Scottish businesses. As the host organisation is publicly funded, with a remit to share knowledge with Scottish business, over 300 companies have discussed, with myself, the implications of moving to a new work environment. The explanation building, and ability to assess organisations conceptually has been highly beneficial, and has led to organisations understanding more about what they should consider should they choose to change. The concern for many organisations is that they have limited access to information, mainly commercial, which they often viewed as biased. Therefore, to receive unbiased, practically tested and empirically researched information, as undertaken in the process of this PhD, has been valued highly by both those practitioners and Scottish Enterprise, the host organisation in this thesis. Consequently, this provided value to me in my role of researcher - contributing to confidence building and gaining knowledge to inform the construction of this thesis.

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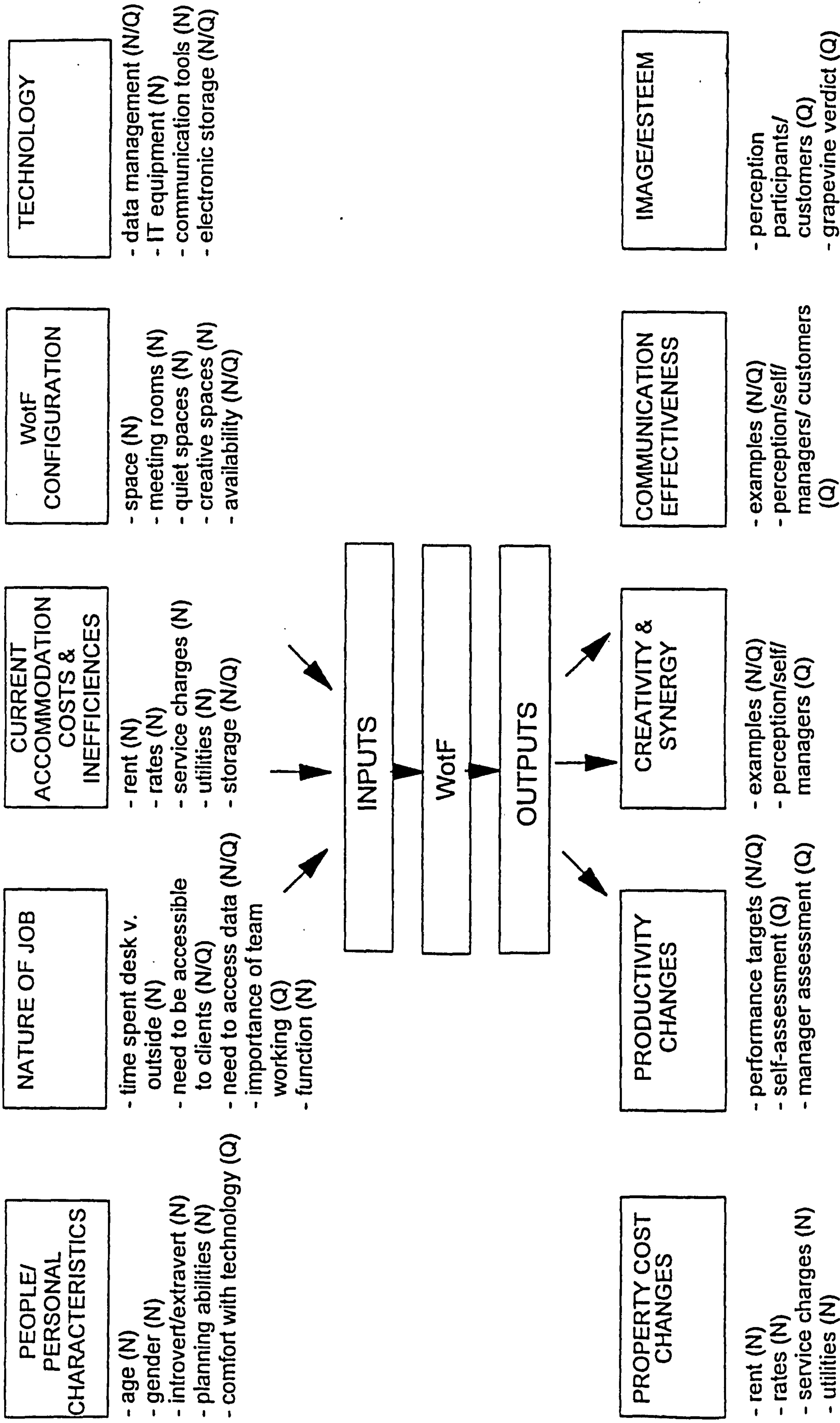
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APPENDIX A

Protocol Framework for the WotF Evaluation

Applied in data sources A1.1 - A1.6

EVALUATION OF WotF PROJECT



APPENDIX B

45 Categories that emerged during data analysis in their original descriptive form

APPENDIX B

45 CATEGORIES THAT EMERGED DURING DATA ANALYSIS

Goals	Integration	Identity
Selection criteria	Pre move fears	Preparation for move or change
Virtual workplace	Protocols & etiquettes	Homeworking
Operational/organisation change	Leave old bad space	Guilt about homeworking
Role of administrator	Resistance to give up permanent desk/office	Attitude
Technology	Physical environment	Management support and leadership
Trust	Personal discipline	Productivity
Transition phase	Individualistic V's team	Hygiene factor – irritant – disabler
People – social capital	HR	User involvement
Creativity	Cross team connections	Tolerance
Physical manifestation	Co-location and synergy	Knowledge sharing
Legitimise and permission	Cross team – takes time	Peer pressure and support
Induction	Colours	Motivation
Minimum expectations in new work environments	Costs	Benefits
Team boundaries exploded – hierarchies & silos gone	Busy / buzz	Interest factor

APPENDIX C

A summary sheet of the 5 main categories that emerged from synthesis of the data.

The first page is a summary overview showing all 5 together in smaller typeset, then the following 7 pages contain the same information in larger typeset for ease of reading.

Text cut off in original

5 Main Categories: Physical Environment; Information Technology; Communications; Team Working; Have & Have not's.

PHYSICAL ENVIRONMENT

A1.1 Benchmark

At the outset there was a belief that the environment would be an important catalyst for increasing productivity and creativity. This environment referred to included home based environments too. Although there was one powerful statement contrary to this belief, Bob Adams quoted "A refurbished office environment is not a prerequisite for new ways of working, investments in technology are more important".

A1.2 1st Evaluation

In this study it was felt that productivity would be increased and creativity unleashed by technology advances, this seemed to matter more than the physical.

A1.3 2nd Evaluation

The environment is still referred to as an important factor more particularly with reference to the colours that contribute to the mood and atmosphere and the different choices of worksettings and ability to work between meetings in the office for homeworkers. Shona refers directly to the physical environment as an enabler if used properly – otherwise could be a disabler.

At this point in the study the physical is also getting the 'blame' because technology failures have seen the return of remote workers to the WotF and pressures on space make the office noisier and less available enclosed/private worksettings – physical manifestation of an underlying problem.

Overall physical environment still seen as better than previous work locations.

A1.4 Final Evaluation

The physical environment seems to be rated highly for its role in breaking down silo's between departments. Praised for less hierarchical design and bright colours for exploding team boundaries.

Some references made to it as being the catalyst for change alone. "The Workplace of the Future demonstrates how overhead costs can be substantially reduced while productivity, staff motivation and customer satisfaction all rise".

Seems some faults (supplies and tidiness) were noticed and commented upon for 1st time and it appeared to be at a static time.

Strong feeling this time that the physical environment can be used as a catalyst for change -- sense that people should be involved in early design stages. Feeling that the physical can also contribute to image and message telling about our business.

A1.5 Summary of Evaluations

Noted that dissatisfaction with old environment was helpful in creating a positive change but not enough in itself. Belbin says dissatisfaction with the current state of affairs a necessary but not sufficient reason for change, two conditions are needed in combination; a sense of disillusionment with the old system along with some beckoning model of the new.

Overall WotF staff report the bright colours and open aspects to have a positive effect on their levels of creativity and productivity.

The development group played a role in redesigning the space i.e. the lounge meeting room walls were erected due to requests and feedback from staff.

Slightly contrary to this Charlie Woods quotes "Flexible working is a demonstration of trust in each others ability to deliver the organisations goals at whatever time from whatever location". In this quote the physical is played down and almost irrelevant -- perhaps viewed as a hygiene factor.

A stronger sense of the relative importance of the physical was given in the quote "our computers and networks are no longer office tools: they have become the immediate environment where we live professionally and do our work", *participant in Futurespace*.

A1.6 WotF Update Report

P&E believed that a move to WotF environment would signal that they were not a traditional anymore and they were more adaptable and embracing change – re-branding themselves.

Reports that the noise levels and distractions in the open plan negatively affect their productivity.

Participants report that the physical environment is not a sufficient catalyst for change. Infact for the first time we are framing it as an irritant if other factors are not properly managed.

P&E prefer design and colours to old school like environment.

INFORMATION TECHNOLOGY

AI.1 Benchmark

IT was seen as a supporting tool that could be used to help advance flexible working.

AI.2 1st Evaluation

IT was deemed crucial to continuance of business norm and it was believed it could increase productivity.

AI.3 2nd Evaluation

Just as it was felt that productivity and creativity would be unleashed by technology at this stage in the case study we can see both productivity and creativity being restricted by failures in technology.

AI.4 Final Evaluation

IT was still seen as crucial to maximising flexibility and supporting new ways of working. More confidence had returned in the systems but not fully. IT department now more alert to the needs of supporting flexible workforce and identify huge costs to be able to respond.

AI.5 Summary of Evaluations

IT now being quoted as main challenge for new ways of working alongside personal discipline.

Technology for futurespace was seen as key – “our competitors and networks are no longer office tools; they have become the immediate environment where we live professionally and do our work”.

AI.6 WotF Update Report

P&E were not provided with the technology required to allow them access to the systems remotely – this severely restricted them to office working and signalled distrust to them from management. They were then forced to work in an environment with distractions and noise when they needed privacy. Clear link where an IT or management problem manifests in the physical workplace – design not supportive.

COMMUNICATIONS

<i>AI.1 Benchmark</i>
At this stage teams met and could rely upon bumping into each other in the workplace to catch up.
<i>AI.2 1st Evaluation</i>
Now the need to formalise team meetings to guarantee contact – otherwise members could ‘miss’ each other when in the office.
<i>AI.3 2nd Evaluation</i>
Developed team communications through an acceptance and practice of the use of emails, telephone conversations and project update meetings when required. There was also an increase in the informal interaction when in the office. Seems teams were happier with the demise of the structured weekly/fortnightly team meeting where everyone was physically present. SFT at this stage are the only team still practising this way.
<i>AI.4 Final Evaluation</i>
Most teams have moved to less formal team meetings even SFT – but more dependent on email, face to face interaction in office and project updates.
<i>AI.5 Summary of Evaluations</i>
All expressed fears about damaging teamwork from the outset before the move.
Strong leadership, commitment and demonstration of change are required to build and strengthen the team through transition.
Peer approval is also captured as important in strengthening the adoption of new ways of working to work through the transition period.
Not easy for new seed to develop in environment & quickly get involved and familiar with team but can quickly understand wider role of SE as exposed to other team activities.
<i>AI.6 WotF Update Report</i>
The P&E team felt relationships were stronger in the old environment. Not too clear on articulating why. With leaders moving on they reported feeling a bit torn. They feel the move towards flexible working has weakened interaction and communication in the team.

TEAM WORKING

A1.1 Benchmark
Cross team working was anticipated to be healthy and happening within a short time or immediately by co locating in WotF.
A1.2 1st Evaluation
Disappointment expressed by staff about the level of occurrences for cross team working and collaboration
A1.3 2nd Evaluation
Project sponsors and participants impressed with the quality of cross team connections being made. It's becoming easier to have conversations and learn from other teams.
A1.4 Final Evaluation
All staff now recognising the value of cross team interaction and knowledge whether it is specifically project related and tangible working together or even just recognising the value of being co-located and overseeing and overhearing activities that broaden knowledge about what's going on around individuals.
A1.5 Summary of Evaluations
Still recognised as a valuable way to work to gain quick and broad understanding of SE. Better to be multi-teams co-locating for maximum integration opportunities and effectiveness.
A1.6 WotF Update Report
One of the objectives of the P&E move was to increase the opportunity for integration with SFT as they were now part of the same directorate. There was no clear evidence that co-location had achieved this except between senior management and director – not at general staff level.
The managers also believe the WotF environment has potential for more visibility, networking opportunities and to be more in tune with SE.

HAVE AND HAVE NOT'S

A1.1 Benchmark
Admin/support staff felt vulnerable, threatened by change and didn't want to be an answering service for flexible workers.
A1.2 1st Evaluation
Admin freed up from routine tasks such as answering calls and being able to be involved in more creative activities.
A1.3 2nd Evaluation
Review of the opportunities for support staff underway – some changes already underway with the freeing up of permanently being office based – element of home working being introduced.
A1.4 Final Evaluation
Same as 2nd evaluation – element of desire to try new ways of working and some home working – others needing tools such as laptops but certainly no signs of fear or hesitation for change.
A1.5 Summary of Evaluations
Noted that the increase in executive and management personal discipline and onus for diary management meant that individuals in some cases interact less with administrators.
A1.6 WotF Update Report
No real issue for P&E – admin member has permanent desk and adjusted to new ways – no real fear.

APPENDIX D

Appendix D shows the time series summary used to identify patterns. This compared the case study and sub-cases over their first six months from inception.

Time Series Summary

	Goals and Objectives	Method of Selection	Pre-move fears and features	Pre-move drivers	Preparation	First 6 months
<p>Enter Space</p>	<p>Primarily to accommodate new integration strategy for department with some focus on customers and finally to maximise efficient use of space and technology</p>	<p>Preset by teams located there and by the department umbrella</p>	<p>Majority of people happy with old environment but embarrassed when bringing external visitors in. Recognised need for more integration between / across teams. Very consultative process involving teams in design, office practices, filing surgeries etc. Decanted from space and recant - 98% felt well informed before move. Unhappy people wanting permanent desk.</p>	<p>New team integration Example to customers</p>	<p>1 project manager and supported by sub groups for filing, design, office practices. Guidelines for short induction for original staff</p>	<p>Unhappiness about not having permanent desk when job required it. Recognition of IT not good enough (breakdown) but these were IT experts so very non-tolerant. Change to cluster team drained energy. Change split the original teams in IIG that were trying to achieve integration and they were now asked to integrate with 2 separate directorates (split between Scottish Business and Clusters). The leader/Director moved out to take his private office on the 6th floor - participants felt left to get on with it - no obvious reward or recognition for new ways of working. People could see personal benefits from homeworking etc, but not supported or encouraged by leaders. Seen as opting out or hiding.</p>
<p>Skillspace</p>	<p>Set out mainly to support internal changes and flat structure - work better with partners and no real consideration of design impact or workpatterns</p>	<p>Was easy as it was a need for all directorate to be involved - just one directorate/ team and not mixing with others</p>	<p>Agenda item at team meetings Encouragement to reduce files Involvement in space design No hot desk prescription - enough desks for all No protocols set Focus was on how to deliver new strategy and not work in office</p>	<p>Changing strategy New team flat structure</p>	<p>No specific preparation for workspace change but focus on change in delivering their strategy as a team Team away day to bond in new structure</p>	<p>Positive attitude Happy to bring external visitors Layout encourage more open communication Signal of trust from ability to work flexibly Merge saw a return to hierarchy New team received no induction to culture or values Differences in standards some ISDN but most not Director continue to work from enclosed personal office</p>
<p>With</p>	<p>Set out clearly at outset. Funding allocated. Staff could take furniture home.</p>	<p>Invitation to all staff - bit of peer pressure - bit of choice.</p>	<p>Team interaction damaged. Individuals would become isolated. Admin left to answer ringing phones. Voicemail damage customer service.</p>	<p>Happy to leave old environment. Perhaps peer pressure. Thoughts of new IT/Space etc.</p>	<p>Detailed questionnaire - gather workpatterns and inform needs of worksettings. Regular emails to keep teams informed of progress and prompt downsizing of files. WotF agenda item on team meetings. Away day for all new teams to meet and discuss protocols.</p>	<p>Very positive attitude towards space - lot of internal changes to teams including restructuring and leader moving on. Recognised new ways of working and malfunctions in technology were mentioned as challenges.</p>

Suspected demotivator - Senior Directors retained offices

APPENDIX E

Appendix E shows the transition models that were used as a longitudinal aid to understanding the changes in the work environments.

APPENDIX E

Transition Model 1 – Tangible characteristics

OLD STATE	TRANSITION	NEW STATE
Few social interruptions and limited distractions by 'unfamiliar' people	↑	Design of new work environment creates choices for working in quiet or busy areas. Opportunity to work from home eliminates workplace distractions. Overall compliance with protocols adopted. Interruptions are welcomed and fruitful.
IT – taken for granted – not a conscious factor within the workplace. Most resources like printers are dedicated to individuals.	↑	Dependency upon IT increases with flexibility. High non tolerance of IT 'down-time'. Fears or disbelief around lack of printers quickly disappear and seem insignificant to staff.
Compensation Inquiry into financial benefit/compensations – feelings that the organisation owe staff if they want them to change.	↑	Realisation of personal benefits outweigh the financial benefits and individuals value the choice and increased control over their working day. Trust and flexibility become new recognised rewards by staff.

Source: developed for this research from analysis of data sources

Transition Model 2 – Intangible characteristics

OLD STATE		TRANSITION		NEW STATE
<p>Presence, regular team contact, high visibility, attendance and time are important measures</p>	↑	<p>Concerns about lack of team contact and uncertainty of team members location Fear of not being able to contact team quickly in times of crisis. Concerns about managing remote workers.</p>	↑	<p>Organised formal team communications and meetings. Comfort with electronic communications. Confidence in new procedures build. Trust and relationships with remote workers established.</p>
<p>Feelings of insecurity of about job prospects – particularly from support staff who see themselves as team core. If all the team work flexibly then they are either surplus to requirement or left to take all the messages.</p>	↑	<p>Recognition that their worries were unfounded. Concerns never materialised. Example, worry over taking messages all day disappeared with the use of voicemail/follow me phone functionality and customer gaining direct contact to members of the team.</p>	↑	<p>Realisation of opportunities to get involved in value added activities and increase work portfolio. Not distracted as often by team members sitting next to them.</p>
<p>Homeworking is sporadic – not openly supported – no clear criteria Waiting for quiet time to ‘sneak off’ home to work</p>	↑	<p>Feelings of guilt while at home and staying by telephone. Awareness of increased personal discipline and self organisation required Overcompensating with working longer hours at home ‘proving trustworthy’</p>	↑	<p>New routine of work based around individual needs accounting for body clock, customer needs, family commitments. Confidence in outputs as demonstration of work builds. Noted efficiency gains</p>

Source: developed for this research from analysis of data sources