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PhD

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Developing and implementing a Knowledge Management Strategy in a multi-cultural engineering design environment.

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ABSTRACT

This thesis is about the development and implementation of a Knowledge Management Strategy in a multi-cultural engineering design environment in the automotive industry. It aims to use knowledge management as a vehicle for organisational change by first, understanding the cultural interactions between partners on their models of learning and then to develop and trial a set of tools and frameworks to raise the capability and improve the efficiency of Nissan Technical Centre Europe.

The main argument of this thesis is that national culture is so invasive and influential on organisational culture that it can become dysfunctional in a global organisation. The "way we do things around here" is a powerful mechanism by which people value themselves and build their identities. Through an action research approach to the design and implementation of a knowledge management strategy the thesis argues that, rather than try to homogenise cultures, global companies need to maximise the different cultural strengths and create agendas for dialogue. In the longer term this will help build relationships, understanding and empathy and ultimately enhance capability. Organisational cultures cannot be dictated but they can be shaped. Operationally, things may appear to be the same across borders but the cultural mechanisms to facilitate operations are inherently different; this difference needs to be understood and appreciated. Organisational efficiency depends on being able to draw on nationalistic and organisational cultural strengths whilst accepting that these strengths need balancing to ensure they do not become self defeating.

The conclusion of the thesis is that knowledge management at Nissan is a process of cultural change, shaped by those in positions of power at any given point in time and dependent on the interaction of structural, organisational, technological and procedural elements which cannot be treated separately and that efficiency, sustainability and the beginnings of a knowledge based learning culture can be realised by organising around knowledge and that knowledge management and organisational learning depend on developing a global mindset which allows for a variety of cultural contexts.

ACKNOWLEDGEMENTS

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Chapter One

Setting the Scene

1. 0 Introduction

This chapter introduces the reader to global Nissan and sets the scene for the study which is about the development and implementation of a knowledge management strategy at Nissan Technical Centre Europe where the author works as the Manager of the Knowledge Management and Audit section. The intent of the strategy was to raise the capability of the company. The three year study began in January 2003 and culminated in a Methodology to Organise Around Knowledge. The study also begins to determine the scope and role of a knowledge manager and meaning of knowledge management within global Nissan. The chapter also introduces reader to the research philosophy and the keys bodies of literature used to substantiate the analysis and recommendations made in the thesis which include organisational culture, knowledge management and learning organisations and ends with a debate about the contribution to knowledge and the overall structure of the thesis

1.1   Background

Nissan's core business is the sale and manufacture of automobiles but it also makes industrial machinery and marine equipment and employs 127, 625 people worldwide. In 2002, Nissan produced 2,761,375 vehicles, 1,317,061 of which were manufactured outside of Japan. The company manufactures vehicles in Japan, USA, Mexico, UK, Spain, Taiwan, Thailand, Philippines, South Africa, Indonesia and China and is supported by a global sales and distribution network (Nissan Fact File, 2003). The company has three main lead research and development (R&D) centres, its headquarters, Nissan Technical Centre, Japan (NTC), Nissan Technical Centre Europe (NTCE), which is in the UK and the Nissan Technical Centre North America (NTCNA), which is in Detroit, USA. It also has much smaller research and

development centres in Brussels (NTCB), Mexico (NMEX), South Africa (NSA), China (DNTC & NCIC)), Taiwan (YNTC) Vietnam (NSEA) and Brazil (NBA). (Appendix 1)

NTCE, where the study takes place employs about a thousand people and has offices in Cranfield, Bedfordshire, England and in Barcelona, Spain. The company is dedicated to tailoring Nissan vehicles for the European market and services two manufacturing plants, Nissan Motor United Kingdom, (NMUK) in the North East of England and Nissan Motor Iberia, (NMISA) in Barcelona, Spain.

The NTCE Knowledge Management Section is part of Product Development Support (PDS), which, as its name suggest focuses on managing the activities to support product design and development. The section had been in existence for about a year when the author took over as Manager. It had been set up by a Director who believed the company needed a computer based project management system, highlighting what sections needed to do and by when which was basically a computerised generic master schedule of events. In principle, it was a sound idea but the Director left the company and without a sponsor the section floundered. The incumbent knowledge manager was pleased to let the author take over the section, so he could *"get on with the real business of making cars."* The Knowledge Management Section was managed by senior who was an ex-trim engineer and comprised of an engineer, who looked after the apprentices, two administrators who concentrated on language services and a placement student who was who working at NTCE for one year as part of an engineering sandwich degree. (First line managers at NTCE are known as seniors). The senior had attempted to understand knowledge management, he had attended a couple of conferences and connected with other knowledge management groups in other organisations but nothing had been done in the way of strategy and implementation of initiatives. Later, the Director of Product Development Support stated that the section was to be disbanded within the year. He said:

"No one really knew what knowledge management was. It sounded like a good idea and something we should be doing. It meant different things to different people but no one actually did anything."

Colleagues at the Nissan Technical Centre were equally baffled by knowledge management. What did it all mean? At one of the first global Knowledge Management meetings in Japan the author was shown the results of discussion between Senior Vice Presidents of the company on the meaning of knowledge management. Their opinions were divided and revolved around four main areas:

- Recurrence Prevention: Finding ways to ensure problems are not repeated;
- Subject Matter Experts – Transfer of Knowledge from the Expert to other staff members;
- Company Intranets - The need for global and local networks of data bases/asset repositories;
- Capturing Processes.

The question remained: What is Knowledge Management? Buckman (2004) argues the term knowledge management is a misnomer much used by consultants to imply that organisational success can be simply achieved by managing explicit knowledge. Scarborough and Swann (2003) have argued that some organisations have introduced Knowledge Management as a panacea for the Business Process Re-engineering Programmes (BPR) of the early nineties. Hammer and Champy (1993), who pioneered BPR defined it as:

> "The fundamental rethinking and radical redesign of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as cost, quality, service and speed." (Hammer and Champy, 1993:32)

Whereas Total Quality Management (TQM) was concerned with continuous incremental improvements, BPR focused on radical restructuring change programmes to improve performance. BPR, ignored history and the politics of organisational cultures and structures and undermined the traditional emphasis on task specialisation. It a process oriented approach, adopting a horizontal view of all the activities involved in the process or activities in the delivery of the product or service. BPR has been criticised as being obsessed with technology and a euphemism for downsizing (Brown and Duguid, 2000). Nevertheless, in its heyday, it gained an impressive following of organisations which were willing to be re-engineered, these included Ford, Hewlett-

Packard, Xerox and IBM. The author will return to the subject of BPR and the link with IBM in Chapter Ten but it is interesting to note at this juncture that BPR initiatives have been given a failure rate of 50-70% and TQM one of 90% (Grey, 2005). The reason for the failures are many and complex and far beyond the scope of this thesis but Grey (2005) makes an interesting and relevant point when discussing why change management fails:

> "Managers responsible for particular change programmes are likely, for career and identity reasons, to describe them as successful. Yet the everyday experience of people in organisations is that one change programme gives way to another in a perennially failing operation: nirvana is always just on its way." (Grey, 2005:97)

Nissan also downsized in the early nineties, swathes of middle managers were made redundant or farmed out into its supplier base. This was compounded by a company policy, which stipulated that managers left the company when they reached the age of fifty five. It was short-sighted and ageist because often these were the people with the knowledge and one of the main criticisms of BPR is that it is people and not systems that deliver (Mullins, 1999). Whilst it may be difficult to define knowledge management there seems to be an agreement, within Nissan at least, that the properties of knowledge are less contentious and fall into the categories as identified by Holden (2002).

- Individuals create knowledge;
- It is expandable, through interpretation and reflection;
- It can be stored in human heads and in technical repositories like books, documents and databases;
- It can be stored systematically to allow easy access;
- It can be summarised and codified;
- It can be shared;
- It can be forgotten.

Almeida et. al, (2003) regard knowledge as the basis of a firm's growth and the key to sustainable competitive advantage. Taking the argument further, knowledge is accumulated only when the whole organisation gains a new understanding and the

deeper that knowledge base, the stronger its competitive advantage. A firm's competitive advantage depends on the resource conversion and market positioning of knowledge. Resource conversion is the firm's ability to create distinctive products from resources generally available to its competitors, this can be through product or process innovation and is articulated by patents, copyrights and trade secrets whereas the market positioning of knowledge is the firm's ability to spot opportunities and avoid threats posed by the environment (Chakravarthy et al., 2003).

The ability of a company to absorb knowledge or its "absorptive capacity" has been defined by Cohen and Levinthal (1990) as the ability to recognise and utilise the value of new external knowledge and apply it commercially to new ends and knowledge management is assumed to have a positive impact on performance (Scarbrough and Swan, 2003). McKern (1996) believes only those firms that develop their knowledge management capabilities will develop a clear cost and performance advantage over their competitors. Knowledge management, in this context is a resource-based view of the firm, focusing on the value of intellectual capital and the process of capturing and using knowledge to enhance organisational performance which suggests competitive advantage can be knowledge embodied internally, in a firm's resource (Drew, 1996). Chakravarthy (1996) argues that sustainable profitable growth can only be achieved by knowledge management activities that protect, leverage and accumulate proprietary knowledge which is crucial to the success of the business.

1.2 Broad Aims and Objectives: The Capability Challenge

NTCE's Managing Director (June 2001 – March 2006) and the main sponsor for this study had a similar view. He wanted to know how we used knowledge management to raise the technical capability of the company. The importance of the study, in trying to establish how the company learns, and manages knowledge – especially in respect of innovation and recurrence prevention – was the topic of discussion during the later part of 2002 because the company was about to undertake its first Case III project.

In the past, NTCE has only concerned itself with Case II development projects, where vehicles are designed and developed by NTC and then handed over to NTCE to finalise the development and take the vehicle into production at one of Nissan's

European manufacturing plants. For Case III, the vehicle platform (chassis) and engine would be designed and developed by the Nissan Technical Centre in Japan but NTCE would be responsible for the design and development of the rest of the vehicle (Figure 1.1). The Managing Director was also interested in culture and asked how it impacted the way we managed different nationalities? He said:

"I expect knowledge management to think about ways to help raise the technical capability of the company. They will make mistakes. They will go down the wrong road but I expect them to find practical ways of managing knowledge."

Case III
Upper
Body & Trim
designed
& developed
by NTCE

Platform & Engine designed and developed by NTC
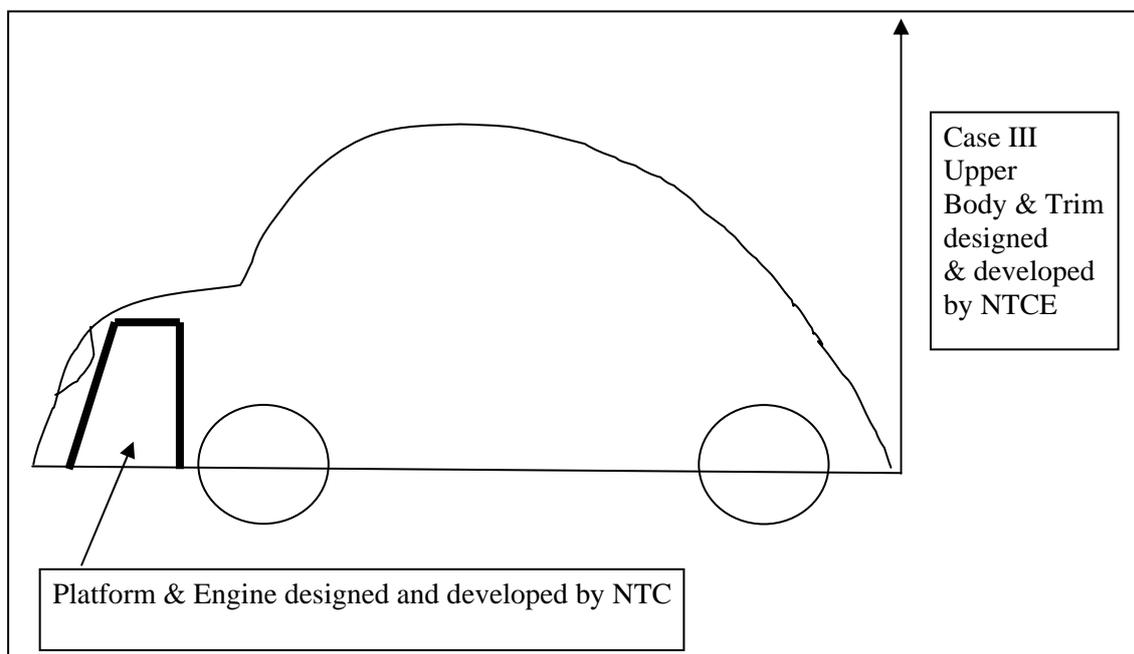
Figure 1.1: Schematic Showing Design and Development Responsibilities

It was a clear direction and an invitation to study with expected outcomes. It was also time based; his sponsorship lasted only as long as he remained with the company. The key word was "practical," although not dismissive of academic study NTCE Directors and Managers soon tire of theoretical discussions which offer nothing concrete. Nissan wants to become a learning organisation which is concerned with the practicalities of discovering how an organisation "should" learn in order to be successful, rather than debating "how" an organisation learns. Senge (1990:1) has defined a learning organisation as

"a place where people continually expand their capacity for creating results they really want, where patterns of thinking are broadened and nurtured, where collective aspiration is free and where people are continually learning to learn."

Garvin's (1993:80) simplified version reads:

"an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behaviour to reflect new knowledge and insights".

The Managing Director wanted to know how to increase the capability of the company to manage shortened lead times and accommodate newly developed global systems. In 2003, at the start of this study NTCE was looking at a lead time, for Case III developments of 26 months from Model Cut Off, when the styling for the new model is finally agreed to Start of Production (SOP). This time also included a trail build (S-Lot) but had a new paperless design release system. In 2007, NTCE's lead time is expected to be 10 months, there will no trial builds and the company is expected to use a suite of new global processes (V3P Tools and Processes). (Figure 1.2)
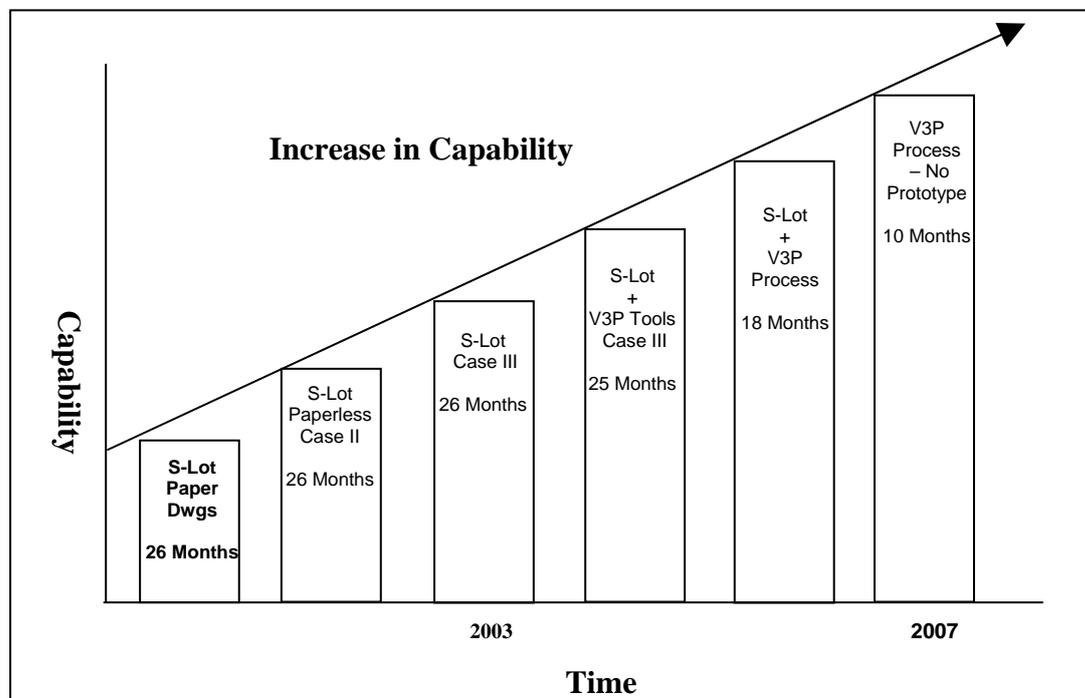
Figure 1.2: NTCE's Capability Challenge for Case III Developments

The Managing Director also talked about the spiral up of technical knowledge and the need for continuous learning. Nissan Technical Centre Japan were developing ten to twelve cars a year, NTCNA (North America) were involved with four to six vehicle programmes a year. Both companies had the opportunity to learn from their experience when compared with NTCE (Europe), which had just begun its first Case III development. It was a tall order but he wanted to know how we closed the capability gap. Figure 1.3: Spiral Up of Knowledge: Column A depicts the spiral up of knowledge. Column B shows the relative spiral up of knowledge, based on the number of vehicles the companies develop in any one year in NTC, NTCNA and NTCE. Column C shows an image of a graph indicating the capability gap between NTC and NTCE.

Column A   **Column B**   **Column C**
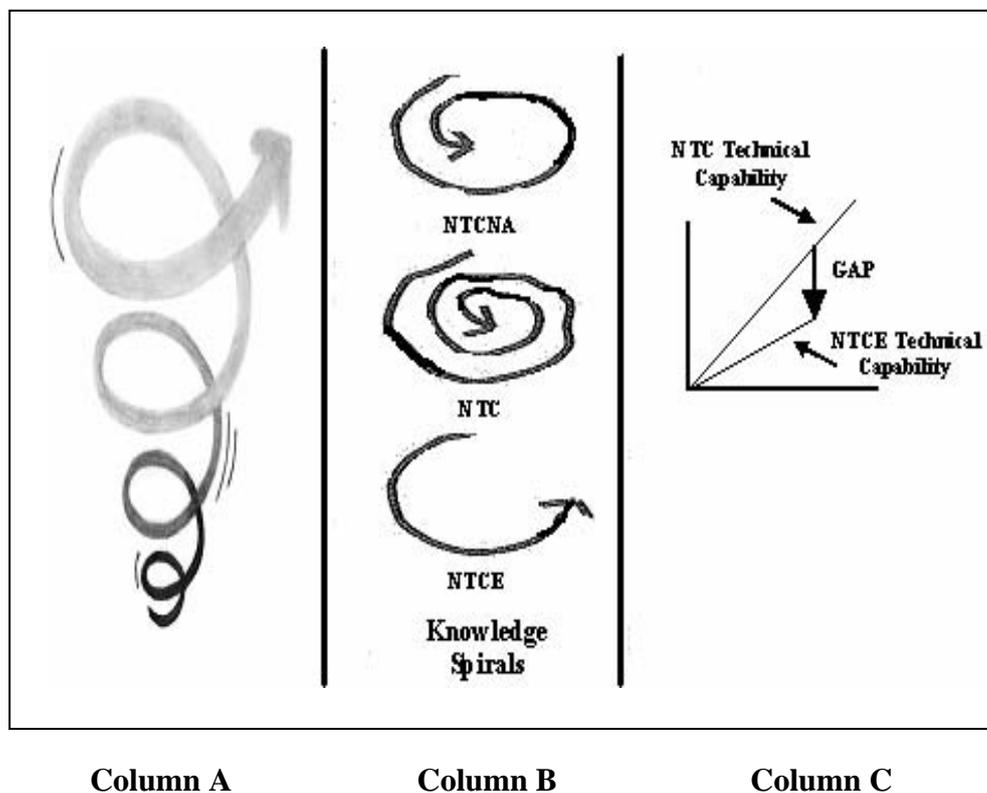
Figure 1.3: Spiral Up of Knowledge

Van der Spek et al. (2002:2) state "knowledge management is not rocket science; it is about smart ways of working and smart businesses." The author has heard similar sentiments expressed by Nissan managers on numerous occasions but contends the implementation and sustainability of a knowledge management strategy is in all probability more complex than rocket science in that its success hinges on human

relationships. Knowledge is worthless unless people are willing to turn knowledge into action. The role of knowledge management is to provide people with culturally tuned methods and tools that build on their understanding of how knowledge underpins the business.

The Managing Director had another challenge, whilst he accepted that any organisational culture is the interaction between the strategies driven from the top, with the working groups of the organisation at base level, he wanted to encourage more bottom up thinking. Cook and Yanow (1993) conceptualised organisational learning as a cultural process, for organisations to learn they must have the right culture, a learning culture. The Managing Director said, that from his experience, NTCE employees were always waiting for direction from their management team. He wanted them to take the initiative and be more like NTC, where he said ideas came from "the bottom up." (Figure 1.4)
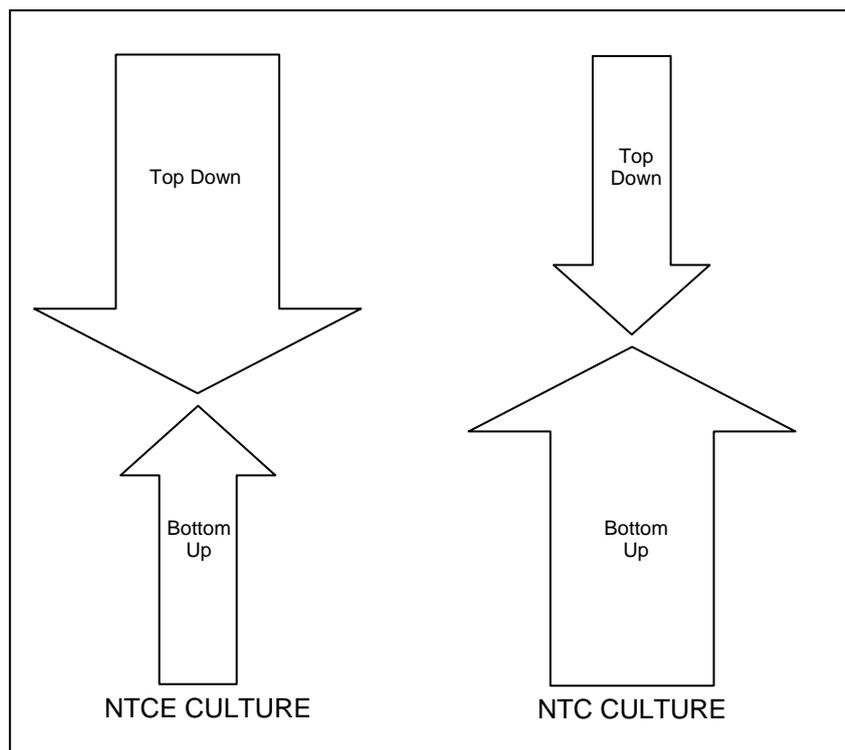
Figure 1.4: Bottom Up Thinking

1. 3 Specific Aims and Objectives

The specific aims and objectives of this thesis are to use knowledge management as a vehicle for organisational change by first, understanding the cultural interactions between partners on their models of learning and then to develop and trial a set of tools and frameworks to raise the capability and improve the efficiency of Nissan Technical Centre Europe. The problem, given the cultural history of the company and the current global economic conditions is how knowledge is transferred that is simultaneously generic in process and content but culturally diverse in implementation and delivery.

1. 4 Research Philosophy: Real World Enquiry

This research is about finding something which is practical and works in "real life" situations. Trist (1976) claims that whilst the natural sciences use controlled laboratory experimentation to generate research findings, social scientists make theoretical progress by applied research. It is not necessarily an easy task. Robson (2002:4) believes one of the challenges of real world enquiry is in saying "something sensible about a complex, relatively poorly controlled and generally 'messy' situation." The employed methodologies and techniques are explained in Chapter Three are largely qualitative and in the form of discussions and semi structured interviews. The bodies of literature used to substantiate the analysis and the recommendations made in this thesis include organisational culture, knowledge management and learning organisations. These are described briefly in the next section and a more detailed literature survey is presented in subsequent chapters.

1.4.1 Organisational Culture

Organisational culture became popular as a management theory in the 1970s. Drennan (1992) defined it as:

> "How things are done around here. It is what is typical of the organisation, the habits, the prevailing attitudes, the grown up pattern of accepted behaviours." (Drennan, 1992:3)

Organisational culture is less easy to understand than the formal elements, such as structure, management, strategy and technology. French and Bell (1990) famously used the metaphor of the organisational iceberg to pictorially express the idea of the formal and informal organisation. Above the water line is the formal organisation; below, is the informal organisation, which is shaped by culture, leadership styles, values, attitudes and beliefs. Presthus (1978) believes we live in organisational societies dominated by global organisations. Civilisation evolves around organisational routines, repeat activities and deference to management authority. Successful organisations need employees who behave and act similarly. To Ohmae (1991), a global organisation should be free from national allegiances. He supports the convergence view that argues the forces of industrialisation will align global strategies, structures and management philosophies regardless of organisational locations and wants to eradicate what he calls the "headquarters mentality." Burack (1991) also believes that ingrained cultural values of an organisation result in uniform behavioural patterns and underlying values regardless of geographic, functional or business boundaries.

1.4.2 Knowledge Management

Prior to 1990, there was little academic interest in knowledge management (Easterby-Smith and Lyles, 2003). Knowledge is purported to be a key competitive asset which forms the basis of a firm's growth (Grant and Baden-Fuller, 1995) and sustainable competitive advantage (Kogut, 1993).   To define this further, it is only proprietary knowledge, relative to the business that is of competitive advantage to the firm. Friedman et al. (1991) argue that two types of knowledge underpin a firm's competitive advantage: resource conversion and market positioning. Resource conversion is the ability of a firm to use available knowledge to create distinctive products, through process or product innovation. Examples of the resource conversion of knowledge include the use of patents, copyrights and trade secrets. The market positioning of knowledge is the ability of a firm to spot, then use the knowledge it has to capitalise on opportunities in its environment. Thus, organisational knowledge can be defined as a study to:

"understand and conceptualise the nature of knowledge that is contained within organizations" and knowledge management as "a technical approach aimed at creating ways of dissemination and leveraging knowledge in order to enhance organizational performance." (Easterby-Smith and Lyles, 2003:3)

1.4.3 Learning Organisations

Whilst accepting that some writers make a distinction between learning organisations and organisational learning the author draws from the literatures of both for this study to support his argument. Organisational learning has been defined as the theoretical study and academic critique of organisational learning processes (Tsang, 1997). This approach is favoured by theoreticians who view organisations as "open systems" or single identities able to process information (Huber, 1991) and are able to scan, interpret and learn from the external environment in a constant manner (Daft & Weick, 1984).

The creation of a learning organisation is said to be about understanding how an organisation is able to prosper from effective learning (Easterby-Smith and Lyles, 2003) and came about with the emergence of communities of practice where it was proposed that learning was shaped by human factors (Brown and Duguid, 1991) and organisations were viewed as a collective culture (Cook & Yannow, 1993) where the knowledge needed to raise skill levels are formulated through the relationship of building and fostering of organisational identities and for the social constructionist, this is done at group level. Orr (1990) calls the knowledge commonly known to all members in the community as the "community memory." The perspectives differ in that information processing concentrates on building structures but the social constructionist, whilst acknowledging context is important focuses on human factors (Lave and Wenger, 1991) however both consider the organisation as a unit of analysis and have the same aim of improving organisational learning.

1. 5 The Contribution to Knowledge

The issue of culture has been relatively neglected from the literature of organizational learning (Hong, 1999). The main argument of this thesis is that national culture is so

invasive and influential on organisational culture that it can become dysfunctional in a global organisation. The "way we do things around here" is a powerful mechanism by which people value themselves and build their identities. Rather than try to homogenise cultures, the aim is to create structures which maximise the different cultural strengths and create agendas for dialogue which, longer term will help build relationships, understanding and empathy and ultimately enhance capability and improve organisational efficiency.

The author is pragmatic enough to realise he is not going to change cultural mindsets believing that the key to sustainability and implementation is in recognising and managing within the cultural restraints of the company. This means recognising and understanding the history, background and implications of the patterns of interaction operating within the company and designing frameworks which minimise misunderstandings and facilitate learning. He argues that these patterns of interaction are culturally ingrained to the point where they are difficult, if not impossible to change and any attempt to do so, at an organisational level is futile. Although individuals can be swayed by the logic of an argument it does not necessarily mean they will alter the way they behave because people, at different times in their lives, depending on their culture and experience are motivated by different things and in different ways.

Nissan Global Culture is the amalgamation of cultures from multiple organisations, scattered across the globe which are unified by a common vision and harnessed by objectives. The question is how you shape culture to improve organisational efficiency. Cultural change is dynamic (ever changing) and cannot be controlled, however by studying culture we can understand the reasons for the differences and identify interventions which may assist in helping culture develop in a particular way, minimising the dysfunctional elements but making the most of the cultural strengths that each company brings to global Nissan. This is not the same as actively forcing change but by understanding the dynamics which cause those changes we can learn how to communicate change within a cultural context. The argument of this thesis is that enhanced capability, efficiency, sustainability and the beginnings of a knowledge based learning culture can only be realised by organising around knowledge. The proposal is to align company and knowledge management strategies by identifying

and organising around the knowledge which is core to the business and the future direction of the company. The theoretical and practical contributions to knowledge are discussed in Chapter Eleven of this thesis.

1.6 Thesis Structure

SECTION ONE: Introduction, Context and Framework for the Study
Chapter One: Setting the Scene. Outlines the Aims, Objectives and Structure of the Thesis.
Chapter Two: The Study in Context
Chapter Three: The Research Philosophy, Strategy and Methodological Framework Underpinning the Study

SECTION FOUR: The Future of Knowledge Management at Nissan and Conclusion to the Study
Chapter Ten: The Future of Knowledge Management at Nissan
Chapter Eleven: Conclusion and Contributions to Knowledge

SECTION TWO: Understanding the Impact of Organisational Culture
Chapter Four: Organisational Culture and the Management of Change
Chapter Five: The Impact of Organisational Culture on Knowledge Management and Learning at Nissan

SECTION THREE: Developing and implementing a Strategy to Organise Around Knowledge
Chapter Six: Putting a face to Knowledge Management at NTCE
Chapter Seven: The proposal to Organise Around Knowledge
Chapter Eight: Phase One: Pilot to Organise Around Knowledge.
Chapter Nine: Phase Two: Pilot to Organise Around Knowledge and Results of Study.

Figure 1.5 : Thesis Structure

The final part of this chapter looks at the thesis structure which is organised into four sections. (Figure 1.5). Section One comprises three Chapters. Chapter One sets the scene and outlines the aims, objectives and structure of the thesis. Chapter Two places the study in the context of global Nissan, whilst Chapter Three presents the research philosophy, strategy and methodological framework underpinning the study.

Section Two is about understanding the impact of organisational culture and comprises of Chapters Four and Five. Chapter Four introduces, debates and compares

the different models and typologies for organisational culture that frame the study whilst Chapter Five, looks at the impact of organisational culture on knowledge management and learning at Nissan.

Section Three is about developing a strategy to organise around knowledge and comprises Chapters Six, Seven, Eight and Nine. Chapter Six begins to face to what knowledge management actually means to the company. Chapter Seven describes the background to the proposal to Organise Around Knowledge. Chapter Eight presents Phase One and Chapter Nine presents Phase Two of the pilot to Organise Around Knowledge. (Figure 1.5)

Section Four comprises Chapters Ten and Eleven. Chapter Ten debates the future of knowledge management at Nissan and Chapter Eleven concludes the thesis by reflecting on the author's role as a researcher and a practitioner. It also summarises what has been achieved against the aims and objectives set out in Chapter One, collates the theoretical and practical contributions to knowledge and presents potential avenues for further study.

Each Chapter is preceded by a section of the thesis structure to show how it relates to the overall study.

1.7 Conclusion

This chapter has explained the background to the study and the reason for the capability challenge and is the building block for the rest of the thesis. It has shown that although there are vague and often conflicting views as to the meaning of knowledge management within the company there is a consensus that it is somehow important. It has given the author a direction and specific aims and objectives which is to use knowledge management as a vehicle for organisational change by first, understanding the cultural interactions between partners on their models of learning and then to develop and trial a set of tools and frameworks to raise the capability and improve the efficiency of Nissan Technical Centre Europe and highlighted the problem which, given the cultural history of the company and the current global economic conditions is how knowledge is transferred that is simultaneously generic in

process and content but culturally diverse in implementation and delivery. In summary, this chapter has:

- Introduced the reader to Nissan and to the Nissan Technical Centre Europe
- Opened the debate on the meaning of knowledge management within Nissan
- Explained the broad and specific aims and objectives of the study
- Described the research philosophy as finding something practical which works in "real life."
- Discussed the contribution to knowledge which is in understanding the implications of culture on learning
- Gave a brief description of the literature underpinning the study.
- Presented the overall structure of the thesis.

Chapter Two places the study in more detail within the context of Global Nissan and Chapter Three introduces the research philosophy, strategy and methodological frameworks which underpin it.

Chapter Two

The Study in Context

2.0 Introduction

This chapter puts the study into the context of global Nissan and shows that the company's approach to knowledge management is rooted in the political and cultural history of Japan. Knowledge management has been defined as "the explicit control and management of knowledge within an organisation aimed at achieving the company's objectives" (Van der Spek and Spijikervet, 1997: 43). Replace the words organisation and company with the word Japan and the definition is still relevant. It also explains the reason for the Nissan Renault Alliance and describes the effect Carlos Ghosn has on the company. The chapter also outlines the strategies the company has used to manage knowledge, its future direction and gives a background to Nissan Manufacturing United Kingdom (NMUK) and Nissan Technical Centre Europe (NTCE).

> **SECTION ONE**:
> Introduction, Context and Framework for the Study
> Chapter One: Setting the Scene. Outlines the Aims, Objectives and Structure of the Thesis.
> **Chapter Two: The Study in Context**
> Chapter Three: The Research Philosophy, Strategy and Methodological Framework Underpinning the Study

2.1   Japan

Japanese culture has been heavily influenced by China. Befu, (1971) reports techniques for the cultivation of wet rice diffused from Central China across the China Seas to Southern Korea and Japan about 300BC, at the beginnings of the Yayoi period. Eighth Century Japanese documents, the *Kojiki* and *Nihin Shoki* record the

historical beginnings of a classical civilisation in Japan, as being the fusion of the indigenous Japanese traditions with the Chinese civilisation of the T'ang Dynasty, which was actively imported from the seventh century. From about the ninth century, Japan ceased contact with China and began to select and assimilate borrowed elements within its culture. T'ang methods of state administration were modified to suit native traditions. Japanese aesthetic style began to reassert itself in various forms of art, architecture and literature. Chinese writing was modified to allow the Japanese language to be recorded in the *kana* syllabary. This process of cultural adaptation, assimilation and diffusion has been referred to by Foster (1960) as cultural crystallisation. Although diplomatic channels may have been closed, the Japanese hierarchy allowed their southern provinces to continue trading with China selecting and controlling the areas of business that suited them. In effect they had created a *'Gaijin Bubble'* in which foreigners were allowed to operate. *Gaijin* is short for *gaikokujin,* "outside country person.

2.1.1 The Tokugawa Shogunate (also known as the Edo Bakufu)

The Tokugawa Shoguns did something similar in the seventeenth century. The Tokugawa Shogunate was a feudal military dictatorship, established in 1603 by Tokugawa Ieyasu and ruled by the Shoguns of the Tokugawa family until 1863. This period, known as the Edo period was named after the capital city of Edo, now called Tokyo, and was based on a strict class of hierarchy. At the top were the warriors, or samurai, followed by the farmers, artisans and traders. Prior to the twentieth century the majority of Japanese people worked the land. The Portuguese and Spanish began trading in Japan from the middle of the sixteenth century. They also bought with them firearms, medicines, clocks and Roman Catholic missionaries. The missionaries proved to be a problem. Fearful of the spread of Christianity and its required allegiance to Rome, the politically astute Tokugawa shoguns recognised that the new religion might ultimately undermine their positions and banned all foreigners from Japan. In 1639, the last of the missionaries were expelled and Japan withdrew from the world for the next two centuries. The only continuous contact with the west was with a contingency of Dutch traders who were allowed to operate in a "Gaijin bubble" out of Deshima, near Nagasaki on the proviso they did not spread Christianity. Japan also allowed China to continue trading through Deshima.

Wolferen, (1989) contends that Japan's relative isolation meant that the Shoguns were able to retain power by controlling the inflow and the impact of foreign culture in that they were able to benefit from their association with the Dutch and the West by carefully selecting goods, techniques and attitudes (knowledge) that would help them consolidate their positions of power in society. The Tokugawa Shoguns also banned firearms, which were introduced by the Portuguese and Spanish traders. Wolferen, believes this was done to minimise the possibility of commoners acquiring the necessary skills of learning how to use firearms and rising up against them. Learning how to use a rifle is simpler than the art of swordsmanship. The Shogunate wanted to learn all it could from the west. Clark, (1979:29) reports:

> "the Tokugawa government continued to support institutions, which translated and studied western books on a range of subjects. In two domains they even set up laboratories for applied research in chemistry, metallurgy and other sciences. The reason for this was of course, political and military."

In 1862, the Shogunate sent an official forty strong delegation to Europe. It was a clandestine operation and one of its objectives was to gain knowledge that would further Japan's "desire for wealth and strength that would enable it to fight Western imperialism" (Cobbing et al.1998:1). The delegation, experts in western studies toured six European countries and compiled a series of reports, the most detailed of them being *Eikoku Tansaku* (Investigation of Britain). These writers have been called "the first real pioneers of systematic overseas research." (Cobbing et al.1998:5)

The Tokugawa Shoguns restricted access to knowledge and manipulated culture to control the vast majority of the Japanese population. Downs (1969:79) called it "the closest totalitarian system ever to appear in pre industrial society" and Tokugawa Ieyasu, the architect of this social order is much admired by modern Japanese businessmen (Zimmerman, 1985). In 1853, United States Commodore, Matthew Perry sailed into Yedo bay and forced the Shogun to open Japan to foreign trade, thus ending the two centuries of Tokugawa policy of isolation. The Tokugawa period ended in 1863 with the restoration of the emperor, supposedly to supreme power although he was no more than a figurehead.

2.1.2 The Meiji Restoration

Highly disciplined managers who had learned their skills during the Tokugawa period were recruited into the new order. Albert Keidal (cited in Zimmerman,1988:6) said in an article about Business and Society in Japan that the existence of this trained body of men was one of the major factors for Japan's successful transition from a being a feudal society to an industrial power. In 1868, under the banner of *Wakonm Yosai,* (Japanese Spirit, Western Techniques) Japan began a process of westernisation. Doi, (1973) believed that Japan felt threatened by the west. He said they were militarily inferior and maintains that the over riding obsession of patriotic Japanese at the time was to learn all it could about the west so it could prevent colonisation. Hunter (1989) draws the same conclusion and reports use of another symbolic slogan *Fukoku Kyohei* (Rich Country, Strong Armed Forces) which was used to rally support in transforming Japan into a modern nation that was both militarily and industrially strong.

The Meiji Restoration imported practically everything they thought would be useful for a new Japan and in 1872 sent a second mission to the west. The Iwakura mission visited the United States and Europe and its' longest sojourn, of four months was spent in Britain (Cobbing et al., 1998). They were based in London but managed to tour the Midlands, the North of England and Scotland. To put the importance of this mission into context it is perhaps useful to note that it was formidably powerful in terms of its leadership. Iwakura Tomomi had the status of Ambassador Plenipotentiary and was the second highest member of the Meiji Government. The three main objectives of the Iwakura Mission were: To secure recognition for the Meiji Government, to open negotiations on the so-called Unequal Treaties and to assess Western civilisation with a view to adopting those parts which were of value to Japan. Kume Kunitake, a thirty three year old Confucian scholar was appointed the task of chronicling the journey. His official account of the mission was published in 1878, entitled *"Tokumeo Zenken Taishi Beio Kairan Jikki,"* (A True Record of the Tour of the Ambassador Extraordinary through the United Sates and Europe). Kume's closely observed, systematic account of Victorian society was an attempt to understand the reasons for Britain's prosperity and to discover information that would be useful for Japan. In 1866, the Meiji Government made passports available and the number of overseas visitors increased dramatically. Students were also sent to Europe

and the United States of America. One of these students, Masujiro Hashimoto went to study engineering in America. He returned in 1911 and founded the Kwasishinsha Motor Car Works in Tokyo.

2.2 Nissan Motor Company

The Kwasishinsha Motor Car Works was the first of the many companies that either by take over or through a series of mergers or alliance, became the Nissan Motor Company.

2.2.1 Origins

Initially, Hashimato repaired and imported vehicles but he had ambition. In 1913, with the help of three business associates he built Japan's first automobile, a 10hp runabout based on a "Swift of Coventry" chassis. He named the car DAT, an acronym, using the first letter from the family name of each of his backers. Marshal, (1967) commented that at the time, individual entrepreneurial endeavours were not readily accepted by a society built on Confucian doctrines. Outward displays of ambitious self-promotion (and sometimes avarice) appalled the Japanese. The conundrum was that although the entrepreneur primarily worked for himself, society benefited from business. The ends seemingly justified the means but to the Japanese, motives were more important than results. The Meiji Government, intent on industrial reformation, set about making the change acceptable and newly established business journals compared businessmen with Samurai. Entrepreneurs were feted. Obata, (1937) said it would not be true to infer a reversal in societal norms but a major change in attitude towards business and industry did take place at this time.

Hashimoto's next vehicle, a two-seater sports car was known as Datsun but the Kwasishinsha Motor Car Company struggled in the early years because of a strong domestic preference for American cars. In 1925, the company merged with the ailing Jitsuyo Motors and six years later, the Tobata Imaon Company, an automotive parts manufacturer took over with the intent of mass-producing vehicles for the domestic market. The company was renamed Nissan Motors in 1933. In the early part of the twentieth century the four major business conglomerates known as *zaibatsu* (Mitsui,

Mitsubishi, Sumitomoto and Yasuda) were formed. They were controlled and owned by family based holding companies, the *zaibatsu* who dominated Japanese industry prior to the end of the Second World War. In the 20s and 30s six other companies, or minor houses were allowed to join the *zaibatsu.* They included the houses of Ayukawa (Nissan Motors), Nomura (securities), Asano (chemicals), Okura (mining), Furukawa (mining), and Nakajima (heavy engineering including aircraft) (Morikawa 1978; Okumura 1991).

Nissan was able to consolidate its oligopolistic position making it impossible for Ford and General Motors, who had begun assembling vehicles in Japan in the late twenties, to compete. Nissan built a new plant in Yokohama and equipped it with machinery imported from the USA and became Japan's first mass producer of cars. Two years before Pearl Harbour, Ford and General Motors withdrew completely from the Japanese market. During the Second World War, Nissan switched production to the manufacture of trucks and aero engines. After the war, Japan's industry was restructured and Nissan was not permitted to manufacture vehicles. The company made technical contracts with Renault, Hillman and Wilbys-Overland and returned to the car business in 1952 via a licensing agreement with Austin Motors. This agreement lasted for eight years. One research study of international strategic alliances confirmed that the primary reason to form alliances was the need for specific resources and competencies to survive in global markets (Faulkner, 1995).

2.2.2 Development

Growth was slow. In 1955 Japanese car companies only produced 20 000 units, five years later it reached 165 000. However, attention was being paid to the detail of car manufacture. Nissan adhered to teachings of US quality control statistician, William E. Deming and soon proved that it was capable of producing small, efficient cars. Factory automation, just in time management and quality improvements led to higher volumes and reduced costs. In 1958, the company started to export vehicles to the United States using the Datsun name. Over the next three years Nissan began low cost assembly operations in Taiwan, Mexico, Thailand and Chile. The company grew rapidly in the 1960s and 1970s; however, the seventies were difficult because one of its key markets was threatened. Two oil crises caused a worldwide slump in the

industry plus the dollar was devalued, and import surcharges made Japanese vehicles much less competitive in America. Nissan's countermeasure was to improve the management of its US subsidiary and to design vehicles specifically for the American market. It proved to be a successful strategy, sales continued to increase with the launch of vehicles like the 210 Honeybee that was capable of forty-one miles to the US gallon and the prestigious 240Z.

From 1980, exports from Japan increased six fold; however, changes in world trade regulations meant Nissan could not rely on export sales for growth but had to manufacture in each of its main overseas markets. In 1981, Nissan Motor Manufacturing Corporation (NMMC) was established in Tennessee, USA. Two years later, the company acquired a stake in the Spanish company, Motor Iberica and, encouraged by grants from the UK, decided to build Nissan Motors UK (NMUK) at Sunderland in the North East, England. The company also entered a joint venture with the Italian car maker, Alfa Romeo to produce cars using shared technology. In 1981, the company started to use the Nissan name to market all vehicles and experienced substantial growth in the domestic market. Up until the late eighties, when it was overtaken by Toyota, Nissan was the largest car manufacturer in Japan.

2.2.3 Recent History

By 1990, Nissan was established as a global player. It had a wide model range, a reputation for quality and engineering and manufacturing in all three of the main regions (Japan, USA and Europe) but then problems began and Nissan reported net losses in seven of the next ten years up to March 2000. The company made 20% fewer cars at the end of the decade than it had at the start and shareholders saw their share equity fall by approximately 30%. There was a downturn in mature world markets and the rapid appreciation of the yen reduced profitability of exporting vehicles These problems were common to all Japanese automobile manufactures but Nissan was the worst hit due to its poor cost control, a lack of innovative products and a conservative organisational culture that slowed decision-making.
During the nineties Nissan lost one percentage point of the European market which equates to 150 000 vehicles. It also failed to anticipate a change in the North American market when consumers switched from cars towards light trucks,

particularly sports utility vehicles and minivans. In this decade the company lost 1.7% of world market share which equates to 600 000 vehicles. This is more than the entire sales of a company such as Volvo. Nissan did try to address the issues: it closed a domestic plant, reduced its workforce and began rationalising its product range. It also shifted its emphasis to overseas markets and upgraded its development and manufacturing facilities in the US and opened a European design centre in the UK (Nissan Technical Centre Europe). In 1993, Nissan began producing vehicles specially designed for Thailand and Taiwan and announced plans to begin manufacture in Malaysia and the Philippines. It also opened a factory in Mexico and established a joint venture in China with Dongfeng Motors Company.

2.2.4 The Nissan Renault Alliance

In 1988, Nissan was struggling with debts of US $22 billion and according to Magee (2003) it had too many factories, too many lack lustre models, too many car platforms, too many suppliers and too many Japanese dealers to survive on its own. Nissan had been trying to make a deal with Daimler Chrysler but they pulled out, saying Nissan's debt problems were too big a burden. Nissan turned to Renault, the French car manufacturer. Renault was strong in Europe but weak elsewhere and needed to establish a base in Asia to fulfil ambitious sales plans. In March 1999 Nissan and Renault agreed to an alliance and Renault currently holds a 44.4% stake in Nissan, whilst Nissan holds a 15% stake in Renault. Together the company would be equivalent to the fourth largest car manufacturer in the world. To strengthen Nissan's management, Carlos Ghosn was appointed Chief Operating Officer of Nissan. Ex-Renault and lauded as "Le Cost Killer," Ghosn was responsible for the cost cutting drive that helped Renault into profit in the mid-nineties.

2.2.5 The Ghosn Effect

Ghosn is Brazilian born to parents who originated from the Lebanon. He was educated at the Notre Dame College, the Jesuit school in Lebanon and then later, he attended the Ecole Ploytechnique, a top engineering University in Paris. His first job was with the Michelin Group, a French based privately held company. By the time he was thirty he was the Chief Operating Officer (COO) of Michelen's South American

operations and three years later he was named CEO of their operations in North America. In 1996 he moved to Renault, responsible for research, purchasing, manufacturing and engineering. He answered only to Louis Schweitzer, who headed Renault.

It is important not to underestimate the effect Ghosn has had on Nissan. Andy Palmer, Corporate Vice President (CVP) of Nissan Light Commercial Vehicles reports: *"Honda has racing, Toyota has Quality; Nissan has Ghosn."* Ghosn is feted as a business celebrity by the Japanese press and people. Numerous Japanese books have been written about him and he often appears in newspapers and on television and he and his family have been featured in lifestyle magazines. Reischauer, (1977) reports that the Japanese respect their elders and it is not unusual for company presidents to be hero worshiped if they model themselves on Confucian ideology where the emphasis is on relationships, education, hard work and the moral obligations of government and business. Favourable media reports and being able to restore Nissan's profitability prepared Japan and Nissan's shareholders for what at one time would have been unthinkable: Ghosn – a *Gaijin* - was made President and Chief Executive Officer of Nissan on June 21, 2001.

Ghosn realised that if he was to change the company he needed the support and trust of the people who worked at Nissan. He knew that if he tried to dictate change he would fail, undermining morale and productivity. His solution was to create Cross Functional Teams (CFTs) and instead of looking for solutions outside of the company he adopted a "bottom up" approach. The CFTs were formed, comprising employees from different disciplines, they were told to identify problems and recommend counter- measures to Ghosn and his Executive Committee about how they could be fixed. The CFT members operated across boundaries, debating concepts and sharing information with people and departments they would typically not come into contact with in daily operations. Many contributors to the knowledge management literature recommend the use of work groups, interdisciplinary and cross functional teams to foster knowledge creation (e.g. Brown and Eisenhart, 1995; Meyer and Tore, 1999; von Krogh et al. 2000). Teamwork may also bring together knowledge, resulting in "new combinations" (Schumpter, 1950) that may facilitate cross-functional communications, cross-fertilization of ideas and enhance worker involvement.

The recommendations made by the CFTs formed the basis of the Nissan Revival Plan (NRP).

2.2.6 Nissan Revival Plan (NRP)

NRP was designed to restore the company to profitability. It was a wide-ranging and comprehensive analysis of the company's problems, followed by a detailed series of proposals that set largely quantifiable targets for the major areas of the business. Key to the success of the revival plan was the successive launch of new and enhanced products to attract interest and increase sales in each of the three main regions. Nissan met all of its NRP objectives and in 1999, the company was returned to bottom line profitability. By the end of fiscal year 2002 it had an operating profit of 4.5% and by the end of 2002 it had reduced net automotive debt by half while increasing the company's investment rate from 3.7% to 5% of sales. NRP may have put Nissan "back on the map," (Magee, 2003:195) but it did not give the company an advantage over its competitors. To be one of the world's most efficient automobile manufacturers Nissan had to achieve sustained growth. Ghosn used his cross-functional teams to decide on a strategy to make Nissan a world leader. The result was Nissan 180.

2.2.7 Nissan 180

Nissan 180 was launched at the start of the 2002 fiscal year and marked the next step in Nissan's revival process. Again the emphasis was on profitable growth. The objectives were defined as:

- 1 million additional unit sales worldwide by October 2005;
- 8 % operating margin for Fiscal Year 2004;
- 0 – Zero net automobile debt by end of Fiscal Year 2004.

The achievement of Nissan 180 objectives depended on four initiatives, known as the four pillars: Generate More Revenue with Less Cost and More Quality and Speed while Maximising the Alliance with Renault. These four pillars drove the company

and individual objectives at every level and were linked to targets and strategies, which had their own key performance indicators. Management by Objectives (MBO) was coined by Drucker (1954) to describe a managerial system, which linked company to individual objectives. MBO is a synthesis of three interventions designed to increase productivity: participative management, goal setting and objective feedback (Rodgers and Hunter, 1991). The criticism is that it is a modern form of scientific management and Jamieson (1979) called it a management pressure device. The assumption is that most people will direct and control themselves willingly if they share in the setting of their objectives and that conflict does not exist between the individual and company goals (Humble, 1972). The emphasis is on creating individual job definitions, which have the stamp of management authority structures.

2.3 Company Strategy

To support Nissan 180, the company has implemented a broad range of strategies. The author does not intend to discuss these in detail but would like to make reference to those which shaped and underpinned his own thinking and the resultant strategy for Knowledge Management at Nissan Technical Centre Europe. These are as follows:

- Management Development – Competencies, Development Programmes and Executive Training.
- Technical
- Design
- Supplier
- Workforce Integration @ Nissan (WIN)
- Globalisation.

2.3.1 Management Development Competencies

In April 2000, Ghosn issued a behavioural guide for Managers which contained the following headings: Profit Driven, Customer Focused, Cross Functional and Global, Bold and Thoughtful and Stretch Goals and Growth. The directive was issued to all Nissan companies and duly debriefed in morning meetings and posted on notice

boards. Little attention was paid to the directive within NTCE. At the time, the author used the directive to underpin a series of behavioural workshops he was managing with designer engineers from the Trim section. At the beginning of one workshop he asked for a show of hands as to how many designers had read the directive. Of thirty-seven people, only one person raised his hand. The fact that the directive was issued shortly after the Alliance was announced shows the importance Ghosn puts on management behaviours and that he expects to lead by example and manage the change.

Areas of Contribution

During the following three years the Behavioural Directive developed into a set of management competencies with the definition: "How leaders will attain the Areas of Contribution through mastery of specific skills and knowledge." The following management competences have been identified as supporting the Areas of Contribution:

Interpersonal Skills
- Developing Strategic Relationships
- Customer Orientation
- Communicating with Impact
- Cultural Interpersonal Effectiveness

Business/Management Skills
- Establishing Strategic Direction
- Business, Global and Cross functional Acumen
- Operational Problem Solving and Decision Making

Leadership Skills
- Selling the Vision
- Empowering/Coaching
- Change Management
- Team Management Recognition

2.3.1.1   Management Development Programme

In January 2004, Nissan Europe introduced a Management Training Road-Map for all managers (Seniors, Section Managers and above). The roadmap has been developed to provide managers with feedback on their strengths and areas for personal development in relation to Nissan's newly developed competences. The competences support the "Area of Contribution" expected of Nissan managers' worldwide. The road map involves the individual manager and his/her immediate manager, plus three direct line employees giving their opinion on the extent to which the individual manager/senior demonstrates the "action statement" within each competency by inserting, in an intranet based software package, a 1-5 score against each statement (1 = Strongly Agree. 5 = Strongly Disagree). From this a radar chart is produced, visually displaying the individual's relative strengths and areas for personal development, overlaying the opinions of the individual's manager and his/her direct line employees. The radar chart is discussed in the annual Performance Appraisal and Development Review (PADR) and agreement is reached on the most appropriate selection of training modules from within the Nissan Pan European Management Development Programme.

2.3.1.2 Global Executive Training (GET) Programme

In 2002, Nissan established the Global Executive training (GET) programme to prepare high performing executives for accession to top leadership positions in the company. The GET programme, developed by Towers Perrin Consultants is a systematic two year development programme and provides assessment, feedback, formal learning, informal development activities and support to develop selected individuals who have been nominated for the programme by top executives, who also acts as mentors to their nominees. There are two groups within GET: an advanced group consisting of Vice Presidents (VP) who may be eligible for Senior V.P positions and an intermediate group consisting of senior manages and directors. The purpose of the training is to integrate knowledge, skills and competencies to demonstrate "mastery" of the Nissan Areas of Contribution. The training takes the form of seminars, on the job assignments and workshops. The workshops provide applicants with opportunities to develop and stretch their leadership styles and skills

by "trying new approaches suggested by expert panellists, team members and case activities that require aggressive or transformational strategies" (GET Executive Training Manual, 2003). Organisations that successfully manage change are those which have integrated their human resource management polices with their strategies and the strategic change process (Johnson and Scholes, 1999). The evidence suggests Ghosn understands the difficulties of managing different cultures and is trying to minimise resistance to change by implementing a set of social controls designed to standardise organisational norms. It is a deliberate attempt to manufacture a cultural change by rewarding acceptable behaviours and is a strategy based on behavioural theories of learning where the focus is on the objective measurement of behaviours.

2.3.2 Technical Strategy

Nissan prides itself on engineering excellence and since the introduction of the Nissan Revival Plan (NRP), Research and Development is receiving more attention and investment. In terms of organisation the company is moving towards a globally integrated organisation. Headquarters is the Nissan Technical Centre (NTC), which is in Tokyo, Japan and there are two regional R&D centres, Nissan Technical Centre North America (NTCNA) which is in Detroit and Nissan Technical Centre Europe which is in Cranfield, Bedfordshire, England. The aim is to integrate the three companies in terms of strategy, processes, standards and benchmarks. However, each of the regional companies will take on more responsibility for the entire product line offered in their region whether they developed it or not. The emphasis for NRP, as already explained was cost saving but now the shift is towards developing core technologies and competencies and ensuring that regional suppliers are capable in providing parts to Nissan. Engineering productivity will also increase with the introduction and extension of more effective and powerful computer aided design (CAD) systems. The criticality and importance of R&D is underlined by the fact that it is the only part of Nissan where employment is increasing.

2.3.3 Design Strategy

Nissan plans to continually introduce new products and revamp existing model ranges in all markets. It aims to be more responsive to market trends by reducing design and development lead times in three main areas:

- Vehicle – platform and upper body;
- Order to delivery;
- Start of sales in foreign markets.

For the purpose of this study the author only need to inform the reader about vehicle – platform and upper body. Consider the platform as being all parts associated with the under floor body metal, the chassis running gear and the engines. Nissan strategy is to reduce, and share the number of platforms and engine variants with Renault. This common approach will allow cost savings and efficiencies through shared research and development. Typically, a development using modified or carry over platforms takes approximately forty months. The upper body refers to all other component parts and systems, which make up the car including interior and exterior trim, seats and the body metal. Major organisational changes have also been made which impact this study. Now each vehicle platform has a Product Director (PD), Chief Vehicle Engineer (CVE) and a Chief Product Specialist (CPS). They in effect 'own' the cars and are accountable for their market success. Previously, the product planners were all powerful in making strategic decisions but at the same time unaccountable for the product.

2.3.4 Supplier Strategy

60% of Nissan's total vehicle costs are for vehicle purchase costs for bought out parts. The Nissan 180 objective was to reduce purchase costs by 15% and one of the ways the company aimed to achieve this objective was to centralise sourcing and buy parts on a global basis. All sourcing decisions are now based on suppliers' performance and lower costs rather than on old style keiretsu relationships.

A keiretsu is a set of companies with interlocking business relationships and shareholdings (Wolferen,1990). Keiretsu were formed after the Second World War and coalesced around large manufacturers, like Nissan or banks. The keiretsu held stock in each other's companies preventing takeover threats from foreign corporations and reducing the pressure on management to achieve results. The keiretsu also purchased goods and services from each other which supported the domestic network but also kept exports out of the country. It benefited the Japanese automakers because the supply chains were closely interlinked, providing products and solutions to problems quickly. Keiretsu associates were non-competitors and helped each other. It was not unusual for keiretsu companies to send workers to other companies to learn new and improved methods of working and Nissan Managers towards the end of their careers often find themselves working in Keiretsu companies to improve the supply chain performance. Cusumano, (1985) says Nissan integrated members of its keiretsu by dispatching executives, extending long term contracts, buying the entire output of factories, providing loans of money or equipment and offering technical guidance in design, accounting cost control. The payoff he argued occurred when Nissan could shift assembly outside the factory to firms with lower wage scales thereby reducing personnel expenses and fixing investment requirements and inventory carrying costs.

However, the Japanese recession in the 1990s had a profound effect on the keiretsu. Many of the large banks were hit hard by bad loan portfolios and forced to merge or go out of business (Graham, 2003). The keirestu system was no longer seen as a viable business model especially since many companies from outside of the keiretsu system, such as Sony began outperforming their counterparts. In 2003, Nissan committed to rid itself of financial links with the majority of its keiretsu family. In 1999, Nissan had shareholdings in 1394 companies and in over half of them that stake amounted to more than 20%. With the exception of four companies, none are now considered indispensable. One of the four companies is Nissan Shatai which produces body panels.

This is not the end of the keiretsu, there is more to the relationship than financial investment but it does make it easier for outside suppliers to compete for business. Another downside of the keiretsu was that they could not always provide Nissan with the latest technological advances it needed to offer its customers and remain

competitive. Nissan needs to support and encourage relationships with key suppliers who can operate globally in providing worldwide best practice and performance in terms of cost quality and delivery. Teamwork is being encouraged between Nissan engineering and purchase departments and suppliers. Nissan specifications, once sacrosanct can be challenged to provide cost savings, proving it does not jeopardise quality. The company is committed to building partnerships with its suppliers and in return for high performance will commit to providing its suppliers with increased business.

2.3.5 Workforce Integration at Nissan (WIN)

The WIN programme was initiated by Nissan Motor Limited in 2003. At the time of writing the author knew little about the WIN programme. The aims and objectives of WIN only became apparent at the beginning of 2004 and negated the need for the author's proposed strategies to integrate knowledge processes. In essence, WIN is multi-phased and aims to transform the way people work at Nissan through the delivery of a comprehensive set of enabling tools and services within the employee portal, combined with supporting resources. The programme is intended to deliver an enhanced user focused intranet and to improve communication and collaboration throughout the organisation. It will launch one common employee portal, with an image, look and feel that complements the brand. The common employee portal is a single global desktop tool that can be accessed at any time from any place and will provide a common link to global and regional news. It will also be a forum to share lessons learned, locate experts and organise and retrieve documents for the business. Nissan used IBM as consultants to advise on the introduction of the tools and systems for WIN.

2.4 Globalisation

The Nissan Renault Alliance will accelerate the globalisation strategies of both companies. Nissan and Renault intend to share and rationalise distribution networks worldwide. This will provide immediate cost savings without damaging the brands. Globalisation necessitates the need for the company to restructure its business and the way it relates to individual markets. Regarding design and development, Ghosn insists

that Nissan make full use of its facilities in Europe and North America. Prior to the alliance, Nissan Technical Centre Japan handled design and development of new vehicles but now the regional design centres will also be given much more influence over their respective markets. To understand this better a more detailed history of Nissan Manufacturing United Kingdom (NMUK) and Nissan Technical Centre Europe Ltd. (NTCE) will now be provided.

2.4.1   Nissan Manufacturing United Kingdom (NMUK)

Nissan Motor Manufacturing (UK) Ltd, or NMUK was established in 1984 in Sunderland, North East England. The company, which is owned and operated by Nissan Europe is the largest car plant in the United Kingdom, and was voted Europe's most productive car company for the years 1986-2004 (Source: Nissan Motor Manufacturing: Encyclopaedia).

Nissan Motors Limited (NML's) initial investment in building NMUK was in excess of £650 million. This was underwritten by over £130 million in public subsidies. At the time the northeast had the highest level of unemployment in mainland Britain. The British government of the day was running down nationalised industries while welcoming inward investment from aboard. The region had lost thousands of jobs through the rundown of the ship building industry and the closure of coal mines and building companies (Stone, 1988). NMUK was built on an 800-acre greenfield site and the company's key component suppliers bought land off Nissan and built their own factories around the plant. This vertical integration between NMUK and its suppliers is seen as being crucial to the efficiency of the Just-In-Time (JIT) production processes. Originally, NMUK employed 3500 people and manufactured "knockdown" Bluebirds from Japan. It was very much a screwdriver operation with parts sent from Japan to be assembled in NMUK (Keely, 2001).

The company was established by a team of high-ranking Japanese secondees using working practices and procedures brought from Japan. The majority of the workforce was recruited locally but adverts went country wide and attracted ambitious young engineers from other industries and the British Motor Industry which then included, Rover, Jaguar and Ford. These recruits brought with them their experience and also

their knowledge of how things were done elsewhere. The Japanese took up positions as Managers or Senior Advisors and moulded the company. Once Nissan had a manufacturing base in the UK, the next step was to control its distribution networks. This led to problems with its independent UK importer, or trading company which had built up the business over the years. Nissan also believed the importer focused on price rather than quality to the detriment of the brand. The case went to court and Nissan won but had to rebuild its image and UK distribution network. Sasaki, (1981) has argued that although trading companies may be expedient in the short term in that they provide entry into a market the process hinders the internationalisation and the integration of their business with local cultures and management systems.

The Japanese approach to manufacturing has been documented by numerous writers. Oliver and Wilkson (1988) in their study of British Industry called this "a process of Japanisation," it was the beginning of what was to become a widespread model as today, Japan's influence on manufacturing systems can be seen across the world. Womack, Jones and Roos (1990) "The Machine That Changed the World" is based on a five-year study of the auto-industry made by the Massachusetts Institute of Technology. It charts Japan's rise to manufacturing supremacy and took the lessons of "lean production" to a wider audience. At the turn of the Twentieth Century, Henry Ford and General Motors' Alfred Sloan moved World manufacturing from craft industries into an age of mass production. After the Second World War, Toyoda and Ohno of the Toyota Motor Company built on Ford's and Sloan's ideas and pioneered the concept of lean production. Knowledge, at an individual level was created through the cognitive process of reflection and learning (Foss and Mahnke, 2003).

Lean production, (Krafcik, 1986) is considered "lean" because it streamlines the mass production process by using less of everything – less human effort, less space, less investment, less inventory and produces a product in less time, with fewer defects with a greater and ever growing choice for the customers. Other car companies have adopted many of these techniques in an effort to improve productivity. Renault, through the Alliance, has made a detailed study of NMUK's manufacturing systems and approach to Lean Production. In many cases, Nissan's European supply base have redesigned its manufacturing plants according to Japanese principles. Complete factories have been overhauled to supply Nissan with the parts it wants, where quality

has been designed into the manufacturing process. Peter Wickens who was NMUK's Personnel Director from 1984-1995 drew on the company's operating manuals and wrote "The Road to Nissan" in which he said the company operated a humanistic system of participative management whereby workers were empowered, through teamwork and multi-skilling to produce quality goods (Wickens, 1987). It is very much a Post Fordist account of benevolence, offering employee job satisfaction (Murray, 1986; Sayer, 1989). On the face of it, Wickens was promoting NMUK as a learning organisation where learning is the process of change in individual and shared thoughts of action and then embedding it in the organisation. Numerous writers (Crossan et al. 1999, Nelson and Winter, 1982; Walsh and Rivera, 1991) argue that when individual and group learning becomes institutionalised, organisational learning occurs and knowledge is embedded in non human repositories such as routines, systems, structures, culture and strategy.

Garrahan and Stewart, (1992) showed the flip side of the coin in their critical study: "The Nissan Enigma." To them, NMUK's practises are a form of social control whereby the employer employee divide is replaced by peer competition and inter-group rivalry. The very essence of Wickens' argument becomes company ideology to ensure the continuity of the manufacturing process is not disrupted. Wickens makes it clear that NMUK is only concerned with those who view the company in its terms and sees loyalty to the company as the modern way forward to growth and prosperity. For Garrahan and Stewart, NMUK's success depends on subordination. Teamwork becomes an exercise in exploitation and surveillance reinforcing

> "neo-Taylorist (separation of execution and design) and neo Human Relations forms of control (reconstitution of the work group around social and organisational imperatives) which legitimate this separation. (Garrahan and Stewart, 1992:90).

Supervisors are charged with meeting production quotas and employee development and peer pressure and camaraderie are used to give workers less space to object through management by stress (Parker and Slaughter, 1989). Kaizen, or standardisation is about deskilling the workforce and identifying slack in the process whereby improvements can be made (Dohse et al, 1985). The Just-In-Time (JIT) methodology reduces workers' control over the speed of manufacture thereby

reducing " parcels of time" or the rest time they were able to accumulate by working up line (Slaughter,1987). Consensus, Garrahan and Stewart argue, is not about listening to others and finding the best solution but about toeing the company line. The point to note, and of relevance to this thesis, is that the Nissan Technical Centre Europe was originally part of NMUK and the majority of NTCE managers worked at NMUK and were indoctrinated into the Nissan way.

2.4.2   Nissan Technical Centre Europe Ltd. (NTCE)

Nissan Technical Centre Europe is located in Cranfield, Bedfordshire and employs about six hundred and fifty engineers. Similarly to NMUK, NTCE was established by a group of Japanese secondees who acted as advisors or managers. Again, adverts were placed in local and national press to attract the most ambitious or disenchanted from rival firms and other industries. Where they existed, NTCE adopted working practices, standards and procedures from Japan and NMUK including the three main standards used by Design Engineers: Nissan Engineering Manuals (NEM), Nissan Design Manuals (NDS) and Nissan Engineering Standards.

Originally, NTCE was called Nissan European Technical Centre (NETC). The name change came in January 2000, to show that the company was part of Nissan Technical Centre Japan. It was one company with an emphasis being placed on a global functional R&D organisation, sharing and collaborating on work and resources. At the same time Nissan Research Centre in Detroit (NRD) became Nissan Technical Centre North America. NTCE is dedicated to tailoring Nissan vehicles for the European market and services two manufacturing plants, Nissan Motor United Kingdom, (NMUK) in the North East of England and Nissan Motor Iberica, (NMISA) in Barcelona, Spain. NTCE also has offices in NMISA and at the engine plant in Madrid. The Cranfield base was established in 1992 but the company had already been in existence for four years, based at NMUK and was originally responsible for localisation of parts for the Nissan Bluebird. NMUK had been built with grants from the UK Government on the proviso that 60% of the cost of parts used for the Bluebird had to be sourced in Europe. In 1990, for the launch of the Primera the Government raised this figure to 80%. To meet this new requirement NTCE issued Japanese

designs to local suppliers and concentrated on developing parts that could match the quality of the originals.

With time, the skill level and engineering facilities at NTCE were improved and it became apparent that the company could contribute to the earlier stages of vehicle development by providing a technical perspective relating to the supplier, manufacturing and customer requirements that are unique to the European market. During the development stages of the Tino, Almera and second generation Primera and Micra, European R&D the company has taken ever-increasing responsibility for vehicle and upper body development. This has been promoted by teams of engineers working on joint development projects in the Technical Centres of Japan and the USA. These were Case II development projects, as explained in Chapter One where vehicles were designed and developed by NTC Japan and then handed over to NTCE to finalise the development and take the vehicle into production at one of Nissan's European manufacturing plants. By demonstrating the ability to support the early stages of product development and to successfully manage lifecycle activities, NTCE has now been given the opportunity to take the lead responsibility for vehicle development for two new projects. These are Case III projects: For Case III, the vehicle platform (chassis) and engine will be designed and developed by NTC Japan but NTCE will be responsible for the design and development of the rest of the vehicle. Today, NTCE is responsible for all Nissan's Research and Development related functions in Europe.

 2.5   Conclusion

In summary, this chapter has put the study into the historical, cultural and geographical context of global Nissan by explaining the company's background and future direction and outlined the strategies the company has employed to manage knowledge. It has shown that Nissan was born out of change and has employed strategies gleaned from history to survive. In just over a century Japan has evolved from an agrarian, feudal society to a modern industrial one and the only way for it to survive is by having a favorable balance of trade and the development of companies like Nissan has been, and is, fundamental to the future prosperity of the nation because Japan has no natural resources to exploit other than its people.

Japan has succeeded by employing various strategies to ensure its economy prospers. It has always controlled from the centre and fused and assimilated ideas, first from China and then later the West. The Japanese created *"Gaijin Bubbles"* where they restricted access to knowledge, and manipulated culture both inside and outside of the *"bubble"* to control the populace. When change was enforced they adapted, employing countermeasures for their survival and it has been said that the Japanese pioneered systematic research. Likewise, Nissan has created has its own *"Gaijin Bubbles"* to learn from the West. The company learned about automotive design and development through carefully arranged strategic alliances and joint ventures. It benchmarked competitors, developed and improved on designs and processes and established companies abroad, educating locals in the "Nissan way" and watched the company grow. The author has also given a background to Nissan Manufacturing United Kingdom (NMUK) and Nissan Technical Centre Europe (NTCE) and more importantly identified adaptive organisational and cultural patterns of behaviour that he will use to inform this thesis and develop his argument to Organise Around Knowledge. This chapter has made the following theoretical and practical contributions to knowledge.

2.5.1 Theoretical Contributions to Knowledge

- The author has identified that Nissan and employed strategies gleaned from Japanese history to survive. In the past Japan has created, what the author has called *"Gaijin Bubbles"* where they restricted access to knowledge, and manipulated culture both inside and outside of the *"bubble"* to control the populace. Likewise, Nissan created its own *"Gaijin Bubbles"* to learn from the West. The company learned about automotive design and development through carefully arranged strategic alliances and joint ventures. Nissan, like Japan has always controlled from the centre and has decided what is allowed in and out of the bubble.

2.5.2 Practical Contributions to Knowledge

- It would be a useful frame of reference for researchers and practitioners to identify if other organisations develop their strategies and adopt practices taken from history. This knowledge would help them analysis change and plan interventions.

The next chapter outlines the research philosophy, strategy and methodological framework which underpin this study.

Chapter Three

The Research Philosophy, Strategy and Methodological Framework Underpinning the Study

3.0 Introduction

This chapter outlines the research philosophy, strategy and methodological framework which underpin this study. It explains why the research philosophy is about finding something practical that works in "real life" situations and discusses various approaches to social research. It debates the research strategy and shows how it is crucial to any study as it determines the type of questions being asked and presents a flexible action research methodology whereby the knowledge management strategy emerges from work grounded in practice and informed by literature in a constant and iterative loop of enquiry and reflection. The chapter also discusses the author's intended role as an internal change agent.

> **SECTION ONE**:
> Introduction, Context and Framework for the Study
> Chapter One: Sets the Scene and outlines the aims, objectives and structure of the thesis.
> Chapter Two: The Study in Context of Global Nissan
> **Chapter Three: The Research Philosophy, Strategy and Methodological Framework**

3.1 Research Philosophy: Real World Enquiry

This research, as stated in Chapter One is about finding something which is practical and works in "real life" situations.   Robson (2002:4) believes one of the challenges of real world enquiry is in saying "something sensible about a complex, relatively poorly controlled and generally 'messy' situation." Robson believes real word research is

enhanced by a scientific approach in that it is carried out "systematically, sceptically and ethically" (2002:20).

- Systematically means treating the research seriously, in being explicit about observations and reflective about the practice and the circumstances in which the research is made.
- Sceptically means scrutinising ideas, observations and ultimately any conclusions drawn from the study.
- Ethically means following a code of conduct whereby the interests and concerns of those taking part in the research are respected. He advocates researching for the "truth" of the matter, warning against acting as an advocate or seeking to promote some particular aspect of the research.

Realism has a long history in the philosophy of science (Manicas, 1987). Initially, when known as naïve realism the approach was severely criticised but it is now an accepted research method known under a variety of labels:- scientific realism, critical realism, fallibilistic realism, subtle realism and transcendental realism. Realism avoids the pitfalls of both positivism and relativism, recognises and accepts different perspectives and sometimes is used to promote social justice (House, 1991). Realists assume there is a reality whether we are aware of it or not. For realists,

"theoretical entities are not hypothetical but real; observations are not the rock bottom of science, but are tenuous and always subject to reinterpretation" (Manicas and Secord, 1983: 406).

Bhaskar (1989) says the role of critical social science is to criticise the social practises that it studies. Critical realists use qualitative data and flexible designs of research because they maintain that theory is central to explaining reality rather than data or the methods used to produce the data. According to Anastas and MacDonald (1994):

"Flexible or qualitative methods have traditionally included the researcher and the relationship with the researched within the boundary of what is examined. Because all any study can do is to approximate knowledge of phenomena as they exist in the real world (fallibilism) the process of study itself must be an object of study. Because all

methods of study can produce only approximations of reality and incomplete understanding of the phenomena of interest as they exist in the real world, the findings of flexible method research can be seen as no more or less legitimate as those of any other type of study" (Anastas and MacDonald, 1994: 60).

In the natural sciences, the validity of results depends on being able to replicate both the study and the findings independently and on several occasions. In real world research such attempts are rarely made; indeed some qualitative researchers consider it an impossibility as each study is considered unique. Tashakkori and Teddlie (1998) believe the qualitative/quantitative debate is no longer useful and can be counter-productive. Bryman (1988) argues the nature of the research should determine the research style and Henwood and Pidgeon (1992) suggest:

"Framing the distinction between quantitative and qualitative research in terms of these two epistemological poles is important in alerting us to the fact that there are competing claims regarding what constitutes warrantable knowledge" (Henwood and Pidgeon, 1992:99).

Hartley (1994) argues that techniques are not of themselves positivist or phenomenological – it is how they are used and how data is interpreted that defines the epistemological assumptions on which they are based. The author plans to use both phenomenological (qualitative and inductive) and positivist (quantitative and deductive) tools where necessary. Brewer and Hunter (1989) advocate a pragmatic approach to research using both quantitative and qualitative methods. Pragmatism is a philosophical position underpinned by the work of Pierce, William James and Dewey (Cherryholmes, 1992; Howe, 1998).

For the pragmatist, the truth is "what works." The research philosophy is therefore trans-disciplinary and draws on knowledge from many fields. Tranfield and Starkey (1998) argue this approach is more likely to produce results that are of use to practising managers. Gibbons et al. (2002:1) describe two forms of research: Mode 1 which is the production of knowledge by scientists, "generated within a disciplinary, primarily cognitive, context" and Mode 2 which questions the relevance and appropriateness of the more traditionally known knowledge producing organisations

like universities, corporate laboratories and governmental research institutions and emphasises rather, the production of knowledge from application. Huff (2000) proposes a compromise 'Mode 1½' position, which is both a theoretical and practical approach to research. This study draws from the following approaches to social research:

- Positivism
- Phenomenology
- Post Positivism
- Constructivism

3.1.1 Positivism (Normative or Standard View of Science)

Byrne (1998:37) suggests that "Positivism is dead. By now it has gone off and is beginning to smell" but many scientists still support and promote the so called normative, or standard view of science. Essentially, positivists look for evidence of a relationship between events, or variables and their theory is deduced by way of testing hypotheses. The underlying assumption is that

> "there is an objective truth existing in the world which can be revealed through the scientific method where the focus is on measuring relationships between variables systematically and statistically" (Cassell and Symon, 1994: 2).

Positivism has a long history. Outhwaite (1987) identified three generations: First, the Nineteenth century positivists, led by Auguste Comte who developed it as a programme of mechanistic social science. Second, the Vienna Circle of logical positivists who argued in the early twentieth century that metaphysical explanations of phenomena were incompatible with science and that science and philosophy should attempt to answer only scientifically answerable questions and third, a post Second World War account developed by Carl Hempel which emphasises the importance of value-free evidence, hard facts and a prediction on policy development.

Positivist approaches have also come under severe criticism from a number of writers including Bhaskar (1986) and Stockman (1983) who contest the idea that every

scientist is capable of experiencing the same "reality." They argue that individual characters and perspectives also have an effect on what is "seen." Bernard (2002:17) believes that today, "positivism is often linked to support for whatever power relations happen to be in place." He argues it is not the positivism of Comte or that of the Vienna Circle that is being criticised but that which Bryant (1985:137) has called "instrumental positivism."

During the 1960s, Decision Theory emphasised the importance of quantifiably analysing the environment before decisions are made (Simon, 1959; Cyert and March, 1963). Classical and decision theory approaches are often described as 'normative' theories of management. Easterby- Smith et al (2003) report quantitative methods are still favoured by business schools in the USA and France. The classical view of management has persisted even though research has shown that although managers work long hours, in reality they are reactive, have little time for forward planning and spend most of the time talking to people (Stewart, 1967, Mintzberg, 1973 and Hales,1986).

Hall (1975), Mishler (1979) and Nixon (1981) argue that positive research methods create over-simplified pictures of complex realties by restricting the researcher's focus to short-run events and isolated variables. Livingston (1971) and Peters and Waterman (1982) believe that the use of analytic techniques is of limited use and if relied upon entirely they may have a negative effect on company performance. They promote managers as visionary leaders ready and able to shape organisational cultural values. This led writers like Boyatzis (1982) and Silver (1991) into describing effective management as a set of skills or behavioural competencies which are now used by Nissan and discussed in previous chapters.

3.1.2 Phenomenology

In the phenomenological and interpretive approaches, the social sciences are applied to social phenomena and theory is generated from and grounded in, the data collected (Glaser and Strauss, 1967). Qualitative methods allow researchers to develop

> "theoretically grounded critical accounts of "what happens" which lead to an understanding of both practice and generalizable "underlying social processes" (Finch, 1985: 114).

Qualitative techniques usually focus on constructivist approaches where there is no clear cut objectivity and social life emerges from the shared creativity of individuals (Filstead, 1978). Hollway (1989) argues social scientists use "quantification" to justify and support their approach as being scientific although the reliability and validity of their results are often challenged because their cause and effect predictions are based on generalizations. Van Maanen (1979) describes qualitative methodologies as an:-

> "umbrella term covering an array of interpretive techniques which seek to describe, decode, translate and otherwise come to terms with meaning not the frequency, of certain more or less naturally occurring phenomena in the social world"(Van Maanen, 1979: 520)

Qualitative research is intrinsically subjective (Bryman, 1988). The argument is that it is impossible for a researcher to be objective because his interpretation of events is influenced by his perspective on life. Glouberman (2003) agrees, believing people are not capable of thinking about anything that does not fit into their normal view of the world but adds "the more perspectives we can imagine, the more channels we can open up*" (Glouberman, 2003: 32). It is believed that qualitative methods are only involved with analysing text or behaviour but Burgoyne (1994) believes it is perfectly acceptable to quantify phenomena if it helps explain the situation. Qualitative methods are flexible, enabling researchers to question themselves and change the nature of their interventions with emerging insights. Often situations are complex and it is difficult to define issues at the beginning of the study and in such cases the triangulation of data and technique by multi-method approaches is paramount in answering important research questions. Qualitative methods enable detailed analysis of change. Quantitative methods can be used to determine what changed when but they cannot be used to determine what processes were involved or why they happened in terms of circumstances and stakeholders.

Qualitative research, generally can only take place in natural settings (Denzin, 1971; Lincoln and Guba, 1985) and focuses on everyday activity as "defined, enacted, smoothed, and made problematic by persons going about their normal routines" (Van Maanen, 1983:255). Bogdan and Taylor (1975) argue qualitative research aims at providing a holistic view, where context and behaviour are interdependent. Flyvbjerg (2001:4) believes that "context and judgement are irreducibly central to understanding human action." His argument for making social science matter is based on a contemporary interpretation of the Aristotelian concept of *phronesis*, variously translated as prudence or practical wisdom.

> "In Aristotle's words phronesis is a state, reasoned and capable of action with regard to things that are good or bad for man. Phronesis goes beyond both analytical, scientific knowledge (episteme) and technical knowledge or know how (techne) and invites judgements and decisions made in the manner of a virtuoso social and political actor. I will argue that phronesis is commonly involved in social practice, and that therefore attempts to reduce social science and theory either to episteme or techne, or comprehend them in those terms are misguided" (Flyvbjerg, 2001:2).

Giorgi (1970) believes qualitative studies focus on understanding the individual and his life. Qualitative researchers interact with people on their own terms (Kirk and Miller, 1986). Employees are participants rather than the subjects of the study. They are expected and encouraged to play a proactive role in the research process in defining the issues which affect them. This thinking is said to make the research process transparent and has led to a view of participative or collaborative research. Usually, researchers attempt to separate the quantitative and qualitative traditions which are now, more commonly known as "post positivist" and "constructivist" approaches.

3.1.3 Post Positivism

Positivists believe there is only one reality. Post positivists also believe a reality exists but consider it can only be known imperfectly and probabilistically because of the researcher's limitations. Reichart and Rallis (1994) report that although "post positivists" recognise that researchers may be influenced by their values, knowledge

and backgrounds they maintain the researcher and the research person are independent.

3.1.4 Constructivism

Constructivism, which is also called interpretive (Schwandt, 1994) or naturalistic (Lincoln and Guba, 1985) research, views reality as being socially constructed. Feyerabend (1978) believes reality can only be constructed conceptually; people attach different sets of meanings and classifications to the world because different cultures and societies have different conceptual systems. Reality is a cultural interpretation, presenting it as the truth is merely an invitation to view things from a different perspective. Constructivist researchers reject the notion of objectivity. Constructivists follow the relativist tradition, where reality is said not to exist outside of human consciousness. Constructivists believe the researcher's role is to understand the multiple social constructions of meanings and knowledge and their favoured research methods such as interviews and observations enable them to acquire multiple perspectives. Research participants help the researchers construct the reality and because there are multiple realties the research questions cannot be formulated in advance of the process. Abell and Simons (2000) report constructionists seek to engage participants in learning processes that:

1. Heighten the understanding of relational processes and knowledge management;
2. Create venues for the expression of multiple stories;
3. Encourage the engineers to reflect upon their beliefs and values and how they impact on project outcomes;
4. Offer a venue for joint collaborative reflection to occur.

3.2 Research Strategy

The research strategy or framework is crucial to any study as the strategies and tactics employed to carry out the research depend very much on the type of question being asked (Manstead and Semin, 1988). The research question, in discovering how to successfully implement and sustain a knowledge management strategy at NTCE is

broadly defined and will most probably be renegotiated as the study progresses and as such, the research framework will itself emerge.

To recap, the author argues the key to sustainability and implementation is in recognising and managing within the cultural restraints of the company. The focus is on understanding the attributes of the organisational cultural lattice which link the knowledge management initiatives at NTCE (Figure 3.1) and then in sharing that understanding with management and employees to encourage them to reflect on how they might modify their approach and behaviours to make a positive and sustainable impact on company profitability.

Knowledge Management Strategy

    Knowledge Management Activities

B32A KNOWLEDGE CAPTURE & TRANSFER	EXPERT FINDER	DESIGN CONTEXTUAL MAPS	ASSET REPOSITORIES
KNOWLEDGE CIRCLES	SOCIAL NETWORK ANALYSIS	ORGANISE AROUND KNOWLEDGE - KAIZEN	AUDIT KNOWLEDGE
E-LEARNING	PROJECT KNOWLEDGE CAPTURE	GENERIC MASTER SCHEDULE	IDENTIFYING VALUABLE KNOWLEDGE
GENERIC MASTER SCHEDULE	DESIGN KEY PROCESSES	DEVELOPMENT NTCE PORTAL	KNOWLEDGE INNOVATION..

Figure 3.1:   The Cultural Lattice Linking Strategy to Knowledge Management Initiatives

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This approach lends itself to a flexible design whereby the various activities of collecting and analysing data, working with new ideas and questions and perhaps even changing the purpose of the study as it develops are still possible.   Figure 3.1 is an early example of the cultural lattice (Chapter 7:190), showing separate knowledge management activities in a lattice arrangement. The author continues to develop and refine the lattice during the course of the study.

3.2.1 Flexible Designs

Qualitative research is inherently flexible to allow designs to emerge and develop during data collection but is sometimes criticised as being untrustworthy because of the absence of a 'standard' means of assuring reliability and validity. To counter the criticism of untrustworthiness Bloor (1997) argues that

> "Social life contains elements which are generalisable across settings (thus providing for the possibility of the social sciences) and other elements that are particular to given settings (thus forever limiting the predictive power of the social sciences)" (Bloor, 1997: 37)

The credibility or trustworthiness of qualitative research is also a subject of debate, given that some people may only find it credible only because it fits in with their prejudices. Writers, like Wolcott (1994) take an extreme relativist stance and completely reject the notion of evaluative criteria such as reliability and validity because of the inappropriateness of its privileged position. Lincoln and Guba (1985b) who use qualitative, flexible designs also deny the relevance of canons of scientific enquiry and avoid using the terms, reliability and validity preferring instead, "credibility, transferability, dependability and conformability" (1985, 294-301).

3.2.2 Validity

Robson (2002) believes that inappropriate frameworks often lead to the validity of the study being questioned. He promotes actively considering alternative explanations and unearthing data which does not necessarily support the researcher's theory. Threats to the validity of flexible designs include: reactivity, respondent bias and researcher bias. Reactivity refers to the way in which the researcher's presence may influence the behaviour of the people involved in the study. Similarly, there may be a respondent bias, ranging from obstructive ness and withholding information if the researcher is seen as a threat. Researcher bias refers to what the researcher brings to the situation in terms of assumptions and preconceptions, which may in some way affect how they behave in the research setting, perhaps in terms of the persons

selected for observation or interview, the kind of questions asked, or the selection of data for reporting and analysis.

3.2.3 Triangulation

Triangulation, which uses multiple sources to ensue rigorous research, is a widely used strategy to help ensure validity. Denzin (1988) has distinguished four types of triangulation:

- Data triangulation: the use of more than one method of data collection (e.g. observation, interviews, documents).
- Observer triangulation: using more than one observer.
- Methodological triangulation: combining quantitative and qualitative approaches.
- Theory triangulation: using multiple theories or perspectives.

However, Bloor (1997) argues that while triangulation is relevant to validity, it is sometimes problematic in that it is difficult to compare findings collected by different methods. Researchers need to be flexible in their design of methodologies. Chesney (2001) maintains this approach makes great demands on the researcher, involving the 'researcher-as-instrument' rather than the researcher relying entirely on specialist tools and instruments. Without doubt, the resultant quality of a flexible design depends very much on the researcher. For people engaged in this type of research it is necessary that they are sensitive to the research environment, have open and enquiring minds, are good listeners and are able to respond to sometimes contradictory evidence.

To guard against researcher bias the author intends to use not only the experience of his section but also that of his Director, his peers and other colleagues within the company. The author also plans to discuss and present his findings to respondents at departmental, group and individual levels and to keep a full record of his activities while carrying out the study. Flexible design traditions relevant to this research are case studies, ethnographic and grounded theory studies and action research.

3.3 Case Studies

Case studies have been used successfully over the years to examine work in many
different organisations and fields of endeavour including administration, anatomy,
anthropology, artificial intelligence, biochemistry, business studies, clinical medicine,
counselling, criminology, education, relations, jurisprudence, management, social
work and sociology (Bromley, 1986). A case study is a research strategy, involving
empirical investigation of problems within their real life context using multiple
sources of evidence (Yin, 1994). Bromley (1986: ix) argues "The individual case
study or situation analysis is the bed-rock of scientific investigation" but admits it is
not the common view. However, Cook and Campbell (1979) see case study as a
legitimate approach and Robson (1993:40) has defined a case study as being the
development of detailed, intensive knowledge about a single case, or a small number
of related, "cases." A case study can be made of virtually anything and answers the
why, what and how questions by giving a rich understanding of the context, content
and the processes being used (Morris and Wood, 1991).

3.3.1   Multiple Case Studies

This research involves multiple case studies. The author considers each box shown in
Figure 3.1 as a possible case study. Yin (1994) makes the useful analogy that carrying
out multiple case studies is like doing multiple experiments. It is not about making
statistical generalisations but to use the findings to make an analytic generalisation or
theoretical generalisation which may help in understanding other situations. Here the
data gained from a particular study provide the theoretical insights which possess a
sufficient degree of generality or universality to allow their projection to other
contexts or situations (Sim, 1998:350).

The first case study provides the contextual evidence to generate a theoretical view
about the phenomena. This theory is put to the test using other case studies, thus
providing patterns of evidence, which are used to either confirm or deny the theory or
to develop alternative theories. Using multiple cases to obtain and predict a similar set
of results provides compelling evidence for the appropriateness of theory in
explaining the situation. This may prove to be an oversimplification because case

studies are likely to be multifaceted and difficult to define with a simple theory. The theory may only be partially relevant or need further clarification "leading to revision and further development of the theory and then probably the need for further case studies" (Robson: 2002:183).

3.3.2 Pilot Studies

A pilot study is a small scale feasibility test of the proposed methodology. It gives the researcher the opportunity to experiment and further develop the methodology before embarking on a full scale enquiry. Yin (1994) views pilot studies as helping

> "investigators to refine their data collection plans with respect to both the content of the data and the procedures to be followed". For Yin, they are a "laboratory for the investigators, allowing them to observe different phenomena from many different angles or to try different approaches on a trial basis" (Yin, 1994: 74)

3.4 Ethnographic Studies

Ethnography, has its roots in anthropology and provides a description and interpretation of the culture and social structure of the group. Ethnographies focus on depth rather than breadth, with an emphasis on description and interpretation (Atkinson and Hammersly, 1994). They aim to produce "thick descriptions" (Geertz, 1973) which enable the culture to be understood from the inside. Sometimes the quality of research is compromised when researchers "turn native" and get too involved with the people being studied but it is argued that it is a necessary risk because

> "in order to truly grasp the lived experience of people from their point of view, one has to enter relationships with them, and hence disturb the natural setting, there is no point in trying to control what is the unavoidable consequences of becoming involved in people's lives in this way" (Davidson and Layder, 1994:165).

Ethnography is often unrealistic for real life enquires as it involves working and living in the field for a number of years and studying people in their natural environment.

However, aspects of the ethnographic approach can be used to help develop theory (Layder, 1993). Blumer talks about using ethnography to lift veils and to dig deeper

> "Central to the way in which ethnographers think about human social action is the idea that people construct the social world both through their interpretations of it and through the actions based upon those interpretations" (cited in Hammersley, 1992: 44).

Case studies can be approached ethnographically; or an ethnographic study can be approached by means of grounded theory.

3.5 Grounded Theory Studies

Grounded theory is both a research strategy and a method for analysing the research data (Glaser and Strauss, 1967). The type of study is about developing a theory relevant to the situation which is the focus of the study. This theory is 'grounded' in data collected during the study, particularly in the actions, interactions and processes of the people involved. Such studies have been carried out in a very wide range of settings. Typical studies include, 'living with multiple sclerosis' (Davis, 1973); relationships between mothers and adult daughters (Henwood, 1993); and decision-making about pregnancy (Currie, 1988). The most common method of collecting data is through interviews, the content of which are analysed and categorised into units of information, relative to events, happenings and instances. The spiral of interviews, analysis and categorisation continues until new information or themes are exhausted. It is not a case of random sampling from a known population to achieve statistical generalisations but the deliberate and purposeful sampling and analysis of interviews and events to glean additional information to generate theory.

3.6 Action Research

The purpose of action research is to influence and instigate change (Argyris et al., 1985; Wilkinson, 1996). Researchers have interpreted action research in many ways, but three common themes have emerged. The first concentrates on the research purpose and the management of change (Cunningham, 1995) and the second relates to

close collaboration of the researchers and practitioners in the research. Eden and Huxham (1996:75) argue the findings from action research result from "involvement with members of an organisation over a matter which is of genuine concern to them." Therefore the researcher is part of the organisation within which the research and change process are taking place (Zuber-Skerritt, 1996). Finally, the action research should have implications beyond its immediate project, in other words the results should inform other contexts. Action research differs from other forms of research because of its explicit focus on action in particular promoting change within the organisation (Marsick and Watkins, 1997).

Habermas (1972) rejects the notion of action research. He argues that development of theory and practice are completely different activities. In constructing theory, the aim is to reflect or interpret the truth whilst in developing practice the aim is to achieve worldly success. These different mindsets reduce the ability of the action researcher to engage in theoretical discourse. Habermas' criticism is based on a belief that society is oppressed and the key to liberation is in the development of theory, out of which new practices can emerge. The basic premise of action research is the active participation of practitioners, the thought being, if they are involved they are more likely to make better decisions and engage in more effective practices. An action research values groups of practitioners carrying out their own enquiry into their own situations and de-emphasises the role of external researchers. First there is the improvement of practice, second there is improvement in understanding by practitioners and third, there is improvement in the situation in which the practise takes place. Collaboration between researchers and participants is a key feature of action research, which is also known as participatory research (Park, 1993) or participatory action research (Selener, 1997).

This research study is concerned with what people do and how they behave and an obvious way to do this is to watch them. Observation involves the systematic observation, recording, description, analysis and interpretation of people's behaviour (Saunders et al. 2000). According to Taylor and Bogdan (1984), participant observation involves social interaction between the researcher and informants in the milieu of the latter. It is qualitative, derives from the work of social anthropology and is about discovering the meanings which people attach to their actions. The author's

knowledge of the organisation and of having worked as an engineer puts him in good stead to be a practitioner researcher adopting the participant observer role proposed for the study workshops. It is not necessary for the author to "learn in context" in the same way than an external consultant or researcher might. Sarantakos (1998) views action research as embodying democratic principles in research where the researcher is

> "a collaborator and a facilitator: the political nature, the participatory character the empancipatory elements and the direct, committing and personal involvement of the researcher are at the front of the research activity" (Sarantakos, 1998: 113)

Action research and the flexible qualitative strategy are similar in that both stress the importance of close links between the researcher and participants. However, Robson (2003) points out that in ethnographic and grounded theory the researcher takes a central role which is at variance with the collaborative democratic stance of action research. A widely adopted version of action research views it as a spiral or cyclical process (Kemmis and Wilkinson, 1998) that involves planning a change, acting and then observing what happens following the change; reflecting on these processes and consequences and then planning further action and repeating the cycle. Action research involves the subjects of the research deciding on what to study and also being involved in carrying out the study and interpreting the results. Corey (1953:40-41) outlines the following steps for action research.

1. The identification of a problem area about which an individual or a group is sufficiently concerned to want to take action;
2. The selection of a specific problem and the formulation of a hypothesis or prediction that implies a goal and a procedure to reaching it;
3. The careful recording of actions taken and the accumulation of evidence to determine the degree to which the goal has been achieved;
4. The inference from this evidence of generalisations regarding the relation between the actions and the desired goal;
5. The continuous retesting of these generalisations in action situations.

The action research model is a data based, problem solving model that replicates the steps involved in the scientific method of inquiry. Beckhard (1969) states that there are three processes involved in action research: data collection, feedback of data to the clients, and action planning based on the data. French and Bell (1984) define action research as

> "the process of systematically collecting research data about an ongoing system relative to some objective, goal or need of that system; feeding these data back into the system; taking actions by altering selected variables within the system based both on the data and on hypotheses; and evaluating the results of actions by collecting more data" (French and Bell, 1984: 108)

The sequence tends to be cyclical, with the focus on new or advanced problems as the client group learns to work more effectively together. Corey, (1953) also said the problem is one of concern to many people or if it is likely that the experiment will affect many people the action research should involve these people. It then becomes cooperative action research. Kemmis (1980) advocated the incorporation of group work into the research process because of the power of group interaction in producing commitment to change in attitude and behaviour. Hord (1981) distinguishes between cooperation and collaboration, suggesting that in the former, participants reach some agreements but proceed individually toward self-defined goals, while in the latter, participants work together on all phases of the project, which provides mutual benefits to each party.

Havelock (1969) says collaborative action research, places greater emphasis on service to the practitioner systems and on the collaborative teaming of research and the practitioner. The inquiry team collaborates on defining goals, on all phases of the research and on change strategies. Collaborative action research suggests that each group represented in the process shares in the planning, implementation, and analysis of the research and that each contributes different expertise and a unique perspective (Oja and Smulyan, 1989). Such collaboration recognises and utilises unique insights and skills provided by each participant while, at the same time demanding that no set of responsibilities is assigned a superior status. Wallet et al (1981) maintain that "parity and equal responsibility" in collaboration

> "does not mean that each member has an equal role in decision making or input
> during all phases of the study. Role shifts occur depending on the needs of the
> situation. Continuity is provided by their researchers through communication and
> collaboration networks they establish with those involved in the study" (Wallet et al.,
> 1981:94).

Another point to note is that collaboration also assumes that researchers and practitioners will communicate frequently and openly throughout the process to avoid possible conflicting perceptions and assumptions which result from their different positions in the field (Threadgold, 1985). The key characteristic of action research is in collaboration, which allows for mutual understanding and consensus, democratic decision making, and common action (Street, 1986). The majority of collaborative action research programmes are similar to case studies in that they focus on immediate problems as defined by the participating practitioners (Cummings and Hustler, 1986; Elliot, 1977). Grundy and Kemmis (1982:87) call for a democratic process of "symmetrical communication" which allows all members to participate on equal terms.

Hord (1981), Nixon (1981) and Grundy and Kemmis (1982) call for strong leadership in collaborative action research. This often means that the leader of the research domain must disperse his or her power sharing control allowing others to delegate and assume responsibility. Action research requires participants to discuss problems, share ideas and be open to learning new skills and behaviours in the research process (Pine 1981). The assumption is that if participants work together on a common problem, clarifying and negotiating ideas and concerns, they will be more likely to change their attitudes and behaviours if research indicates such change is necessary (Anning, 1986; Cassidy, 1986). Another expected outcome of using action research is that those involved will grow professionally. Through action research, participants will gain new knowledge which will help them solve other problems, broaden their general knowledge base and learn new skills which can be applied to future interests and concerns (Street, 1986) and be more able to solve problems as they arise (Pine,1981).

Anning (1986) and Elliot (1977) conclude as part of their studies on the teaching profession that it is only through participation in planning and implementing new

practises and observing and analysing their effects will individuals accept and use research findings. Oja and Ham (1984) and Pollard (1988) concur; they report that it is only through participating in action research that individuals become more critical and reflective about their own practise. However, Adelemen (1989: 179) has criticised action research in educational settings as being of poor quality and "inward looking and ahistorical." He describes the view of action research as an "alternative research paradigm, as a democratising force and means of achieving informed, practical change arising from issues at grass roots" as "overbearing." Similarly, Atkinson and Delamont (1985) have criticised action research in educational research as being atheoretical.

Oja and Smulyan (1989) maintain that successful collaborative action research depends on a project structure consisting of at least four elements (i) frequent and open communication among participants (ii) democratic project leadership (iii) spiralling cycles of planning acting observing and reflecting and (iv) positive relationships. Communication can be difficult at the best of times, especially, as in this study when we are dealing with mainly Japanese, British and Spanish Engineers. Holley (1997) and Threadgold (1985) both say communications can break down due to differences in language, perceptions and expectations, which result from their different positions in the field. Lewin (1948) explains that action research proceeds through spiralling cycles of planning execution and reconnaissance (or fact finding). These cycles have been designed into the study by means of encouraging individuals to reflect on their behaviours and learning following the workshops and in subsequently trying to implement a new behavioural code. Grundy and Kemmis (1982) explain that spiralling cycles are necessary to bring the action research under control and develop an effective critique of the situation. Ebbutt (1985) sees the process of action research as a series of successive cycles each incorporating the possibility for feedback of information within and between cycles.

3.7 Research Methodology.

This research, as already explained at the beginning of this chapter is about finding something practical which works in real life and as such the author intends to act as an internal change agent and adopt a flexible action research methodology whereby the

knowledge management strategy emerges from work grounded in practice and informed by literature in a constant and iterative loop of enquiry and reflection (Figure 3.2).

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┊ ┌──────────────────────────────┐                         ┊
┊ │ Previous Work/ Nissan Experience │◄──────────┐         ┊
┊ └──────────────────────────────┘           │         ┊
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┊ │               Reflection                 │ │         ┊
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┊ │       Literature Review       │───────────┘         ┊
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│ Knowledge Management Initiatives (Case │◄──────────┐
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│ Develop Knowledge Management Strategy  │
│  to Raise the Capability of the Company │
└──────────────────────────────────────┘
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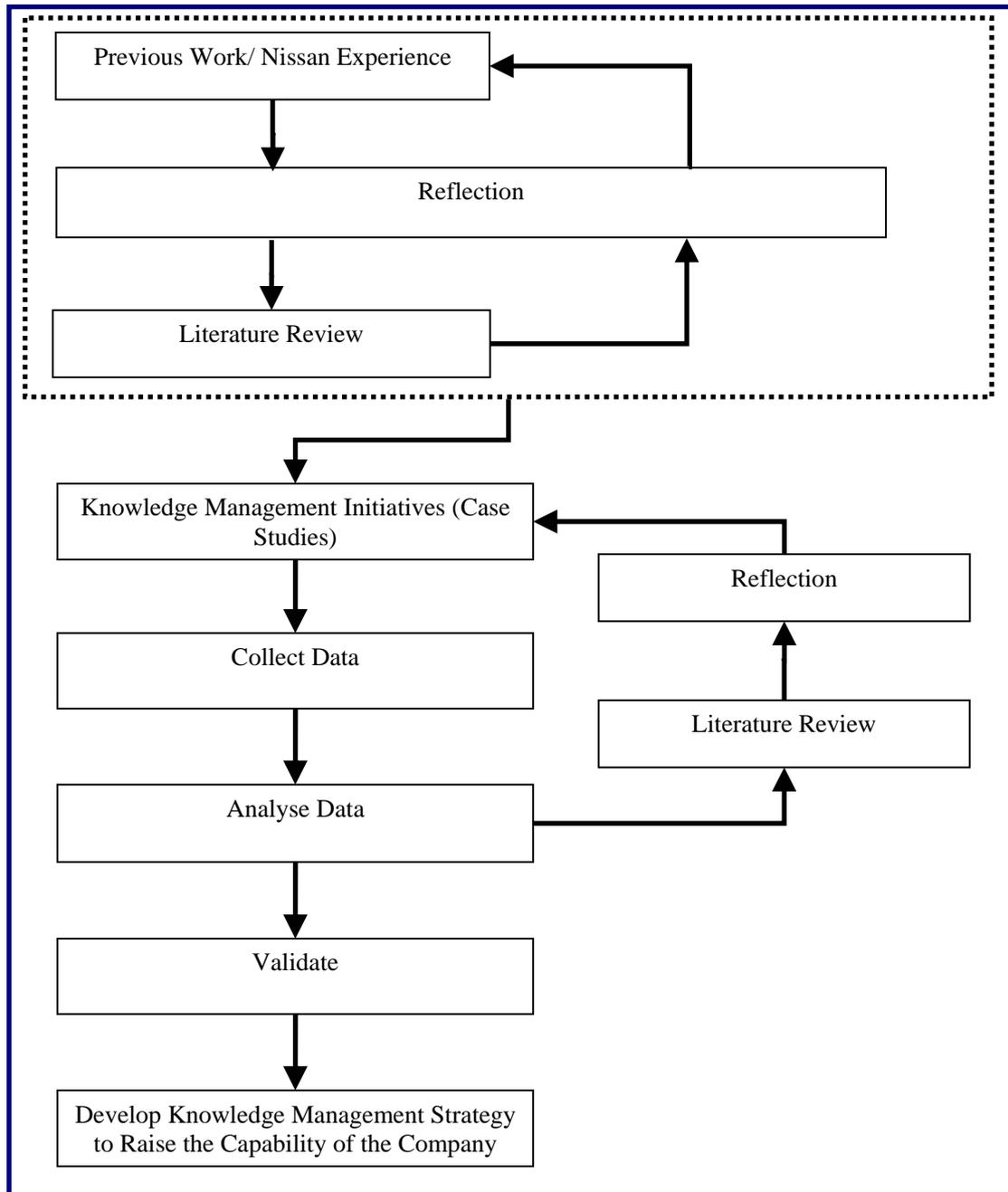
Figure 3.2: Proposed Research Methodology

The beginnings of the methodology are grounded in the years of practical experience the author has of working both at Nissan and within the automotive industry. He

intends to use the knowledge management initiatives (case studies) shown in Figure 3.1. as a baseline for the study. The background and reasons for the initiatives are explained in Chapter Six and although each can be justified as a separate study they should be seen as a means for deriving a knowledge management strategy rather than being the strategy. At the time the author decided on the methodology the initiatives were not linked by the coherence of an over-arching strategy. Quantitative and qualitative techniques will be used to analyse data which is collected by various means as explained in subsequent sections.

3.7.1 Data Collection

Various methods will be used to collect data however, it is anticipated that they will including surveys, interviews, observation, documentary analysis and access to data archives within Nissan.

3.7.1.1 Survey

Surveys are usually associated with the deductive approach and used in non experimental fixed designs. Surveys are designed to be easily understood and are an economical way of collecting data from a large population. Most surveys involve the use of standardised questionnaires where the resultant data can be easily compared. The questionnaires are usually administered in one of the following ways:

- Self completion: the respondent answers the questionnaire which has been sent by post, email or online.
- Face to face interview: the researcher directly asks the respondent prepared questions and records the answers.
- Telephone interview.

For instance, the author used a questionnaire when trying to understand whether NTC engineers approach Design Reviews with a different mindset than their NTCE colleagues (Chapter 7:184). The questionnaire, which comprised of eight questions was sent to Japanese and British Senior Engineers and Managers who had experience

of both working in NTCE and NTC. Each respondent was asked whether he agreed or disagreed with a given statement i.e. Design Reviews are more effective in NTC than in NTCE. (Appendix 2). The questionnaire was emailed or posted to respondents in the UK, Spain and Japan. The results were collated and analysed and follow up interviews arranged either face or face or by the telephone to ask for clarification or discuss issues.

3.7.1.2 Interviews

Interviewing, as a technique is very much used in social research. It is said to be a meaningful discussion between two people (Kahn and Cannell, 1957). The purpose of an interview is to gather valid data relevant to the research. Interviews can be structured (standardised), semi-structured (non-standardised) or unstructured.

- Structured: Use predetermined and standardised questions.
- Semi Structured: The researcher has a list of questions or themes to choose from and leads the respondent into a discussion.
- Unstructured: These are informal in-depth interviews, with no predetermined questions other than an idea of what needs to be discussed. They are non directive, in that the interviewee guides the discussion.

For examples of how and when these interviews were employed see:

Interviewing Technique	Example	Chapter/Page
Structured	Design Reviews	7/185
Semi structured	Extract from Interview	8/216
Unstructured	Collecting Anecdotal Evidence: *"There is definitely a blame culture in NTC …."*	5/120

3.7.1.3 Group/Section Interviews

The author also intends to conduct group interviews where he acts as the facilitator and manager of the discussion. Themes are developed through exploring the topic in question and as such the interview is bound to be relatively unstructured and free

flowing as identified by Zikmund (1997). In all cases the onus is on the author to encourage the participants to relax and to initiate the discussion (Easterby-Smith et al. 1991). There are distinct advantages to using the group interview as it allows a variety of points to emerge and for the group to respond and discuss these issues. The author used group/section interviews extensively throughout the study. Often they happened during workshops as in the case of the Behavioural Workshops (Chapter 8:210) or lodgings, which are meetings held offsite. These meetings are usually held in hotels or conference centres and run well into the evening and attendees usually stay overnight. They are also seen as team building events.

3.7.1.4 Recording Data

Healey (1991) suggests that a full record of an interview be compiled as soon as it has taken place. If it is not, the exact nature of the explanations may be lost. There is also the possibility that the researcher may inadvertently mix up data from different interviews when a number are carried out in a short period of time (Ghauri et al.,1995). The author intends to make notes of the one to one interviews occasionally reflecting on his understanding of what is being said and also allowing the interviewee to read the notes as they are being written. This is important, especially when interviewing Japanese colleagues. The author is conscious that an in depth interview at least offers the opportunity to explore meanings, including those which may be culturally specific, as identified by Marshall and Rossman (1999). Many of the interviews where recorded, transcribed and analysed. (Appendix 3)

Verbatim from ad-hoc discussions were also made and filed and used to support the arguments and findings made in this thesis. For instance: Notes made by the author on 10th March 2004

Kinoshita san said: *"When the French make a presentation they put as little as possible information on the slide and expect the presenter to talk around it. It is important for the people at the meeting to discuss/debate and understands the philosophy of what is being said. In Japan it is different. The context. The philosophy of how we do things is already understood. In fact it can be quite shocking if someone questions it. Why are you asking that when you know the answer? In Japan we do not*

expect much discussion during the presentation. Everything will be on the slide. The French like to start at zero. They do not like pre-described solutions. They like to debate. This is a difference between the cultures. In Japan we have a saying I Shin Ren Shin, which means we can communicate what we're thinking with our hearts."

3.7.1.5 Observation

Observing the way people behave and the environments in which thy do so are a central part of this study. There are different observational techniques. At the one end of the spectrum is participant observation and at the other structured observation. Participant observation is a qualitative style usually used in flexible designs, whilst structured observation is quantitative and exclusively used in fixed designs. There is a third style, which is called unobtrusive observation, which is non participatory and non-reactive. Unobtrusive observation can be structured but it is usually informal and unstructured. The author proposes to use participant observation and unobtrusive observation as part of this study. Examples of when participant and unobtrusive observation was used include:

Observation Technique	Event/Background	Chapter/Page
Participant	Managers Workshop: Building Collaborative Relationships	9/247
Unobtrusive	Developing the PDS Mindset Questionnaire	8/23

3.7.1.6 Documents

The author also intends to use documents as part as part of his analysis. These can be in the form of written and non- written documentation. Written documentation can be from a book, newspaper or magazine, or transcripts of speeches made by prominent people about Nissan whilst non-written documentation can be from televised events, pictures, drawings and photographs. This approach is also called content analysis, or the qualitative analysis of the content of the document which has been defined as "a

research technique for making replicable and valid inferences from data to their context (Krippendorff, 1980:21). Examples of where documents have been used for content analysis are:-

Medium	Example	Chapter/Page
Newspaper	The Japan Times	4/73
Magazine	Automotive News (January 2006)	10/281
Transcripts of Speeches	"The Power of Nissan Comes from Inside."	10/281
Televised Events	BBC Programme "So What Do You Do in a Day?"	4/73

3.7.1.7 Data Archives

Linked to the above the author has access to, and proposes to draw on, the enormous amount of data which is stored throughout the company. Some of these records are in the form of documentation; others are in the form of quantitative statistical reports which may be of relevance to this study.

Document	Chapter/Page
Internal Executive Report – "*What's going on in the EVP Office* (No. 137) June 30th. 2004	5/100
Nissan Europe's Quality of Management Survey Analysis - 2002	9/264

3.8 The Researcher as an Internal Change Agent

The author accepts that he could be disadvantaged by his preconceptions and assumptions of having worked within Nissan for a good number of years and also wonders if his position, as Manager in the company, will inhibit interactions with participants but believes if they are carefully managed the advantages outweigh the disadvantages of being both an internal change agent and researcher. Cassell (1989)

and Cassell and Fitter (1992) believe the perceived role of the researcher forms an important part to the research study. The researcher is seen as being skilled not only in research methodologies and techniques, but in their ability to interact with others. Qualitative techniques usually focus on constructivist approaches where there is no clear cut objectivity and social life emerges from the shared creativity of individuals (Filstead, 1978). Hollway (1989) argues social scientists use "quantification" to justify and support their approach as being scientific although the reliability and validity of their results are often challenged because their cause and effect predictions are based on generalizations. Van Maanen (1979) describes qualitative methodologies as an

> "umbrella term covering an array of interpretive techniques which seek to describe, decode, translate and other otherwise comes to terms with meaning not the frequency, of certain more or less naturally occurring phenomena in the social world"(Van Maanen, 1979: 520)

Van Maanen argues that because qualitative methods frequently involve a longer term commitment, researchers are likely to build closer working relationships with people and be able to more easily share insights and experience. Hammersley and Atkinson (1983) make much of the reflexivity of social research:

> "We are part of the social world we study… this is not a matter of methodological commitment, it is an existential fact. There is no way in which we can escape the social world in order to study it; nor fortunately, is that necessary. We cannot avoid relying on "common sense" knowledge nor, often can we avoid having an effect on the social phenomena we study" (Hammersley and Atkinson, 1983:15).

For any change agent there must be a decent match of personality and management style (Shenson, 1990). The two key benefits of using internal change agents are - cost and access to information. In comparison, the costs of training and using internal change agents are minimal when compared with using an outside consultancy firm. Heller (1986) purports change is a process, not an event and stresses that things can go wrong at each stage saying new findings and ideas may not be seriously considered

because of deep seated prejudices. Engineers do not necessarily have the expertise in the strategies, methods and analytical techniques needed to carry out research.

The internal change agent may also have access to information that the external agent cannot hope to get to, no matter how long the project runs. Qualitative techniques usually focus on constructivist approaches where there is no clear cut objectivity and social life emerges from the shared creativity of individuals (Filstead, 1978). Hollway (1989) argues social scientists use "quantification" to justify and support their approach as being scientific although the reliability and validity of their results are often challenged because their cause and effect predictions are based on generalizations. Van Maanen (1979) describes qualitative methodologies as an

> "umbrella term covering an array of interpretive techniques which seek to describe, decode, translate and other otherwise comes to terms with meaning not the frequency, of certain more or less naturally occurring phenomena in the social world"(Van Maanen, 1979: 520)

The ongoing availability of the internal consultant to guide implementation of recommendations and to use his or her experience across the organisation cannot be counted upon with external consultant (Berenbaum, 1997). Internal change agents have the advantage of understanding the organisational culture, enabling them to better understand people's reaction when they are involved in change. They may also be more socialised into the organisational norms and beliefs and more sensitive to local politics and behaviours. McLachlin, (1999) referred to this as a "cultural fit." However, as Marguiles and Raia (1978) point out, to be effective the internal consultant is required to maintain a marginal status between being internal and being objective. The internal change agent needs to build a personal resilience, including some element of "healthy detachment" from the organisation so that he or she maintains objectivity. According to McCalman and Paton, (1992:54) the factors hindering the internal change agent's objectivity are:

1. Being too close to the problem;
2. Being part of the problem;

3. Being unwilling to confront issues when promotion and pay issues are forthcoming;

4. Being part of the power system being examined;

5. Being aware of the needs and demands of superiors.

Two other issues which may inhibit an internal change agent's ability to effect change relate to the method of entry into the change project and the nature of the voluntary relationship. In entering the change management contract as facilitator, the internal change agent has to convince management and employees within a particular part of the organisation of his or her expertise in the area and he or she also has to display "a willingness to help" (McCalman and Paton, 1992:54). These issues are no different from those faced by the external change agent and the confidence and trust will come from running successful change management programmes within the organisation. However, the internal change agent has to be more successful than the external change agent in making these interventions an open education process for the organisation.

Internal change agents have the ability to maintain longer-term relationships and interactions with all those involved in change, although it can be fraught at times as they try to preserve and change relationships. It is assumed that they can closely monitor changes in relation to evaluating effects, although the socialised eye may not notice the difference on a day-to-day basis, or may be influenced by knowing the organisation too well. There may also be other disadvantages especially if internal change agents are perceived by the organisation and its members in a certain way or are stereotyped as having certain traits or behaviours. Additionally they many also face positional issues whereby their ability to influence certain factions may be less than that of an external change agent. They may be seen as a threat to Senior Management, who "struggle to maintain their privileged position as stewards of organisational truths," and as such they can "tend to discredit the representations and knowledge offered by others" (Fulop and Rifkin, 1997: 45-63). Integrity and credibility may also be a problem for the internal change agent. They may be seen as management spies, threatening openness and trust, and as Berenbaum (1997) remarked it would become "difficult to convince the operating departments that the consulting role was anything other than that of espionage."

3.9 Conclusion

This chapter gives a clear research framework for the thesis. It explains the methodologies, tools and techniques the author proposed to use and where appropriate cross references and gives actual examples where and how they were used in the thesis. However, in writing this chapter he was well aware that given the emergent nature of the study he expected both the strategy and methodology to change, the details of which are explained in subsequent chapters. The strategies were emergent due to the author reflecting and learning from what he did both as a researcher and as a practitioner. The author also returns to the subject of internal change agents in Chapter Eleven of this thesis and explains how and why his perceptions of his role altered during the study. In summary, this chapter has outlined the research philosophy, strategy and methodological framework which underpin this study and has:

- Explained that the research philosophy is about finding something practical that works in "real life" situations and discussed the various approaches to social research that the author intends to use.

- Debated the research strategy and shown how it is crucial to any study as it determines the type of questions being asked.

- Presented a flexible action research methodology whereby the knowledge management strategy emerges from work grounded in practice and informed by literature in a constant and iterative loop of enquiry and reflection.

- Discussed the author's intended role as an internal change.

The next chapter opens Section Two: Understanding Organisational Culture.

Section Two: Understanding the Impact of Organisational Culture

Chapter Four

Organisational Culture and the Management of Change

4. 0 Introduction

This chapter opens Section Two of the thesis and introduces debates and compares the different models and typologies that help frame the study and its grounding in organisational culture. It begins by exploring the philosophical background of the word culture and then considers the impact of organisational cultures, leadership and change management programmes within Nissan and uses examples to illustrate some of the key cultural characteristics of working with the Japanese.

> SECTION ONE: The context and framework for the study
> Chapter Two: The study in context of Global Nissan
> Chapter Three: The research philosophy, strategy and methodological framework underpinning the study
>
> ↓
>
> SECTION TWO: Understanding the impact of Organisational Culture
> **Chapter Four: Organisational Culture and the Management of Change**
> Chapter Five: The impact of organisational culture on knowledge management and learning at Nissan

4.1 Background

Culture is a relatively modern concept. In an anthropological and social sense the word culture refers to "civilisation" and "social heritage." It was originally an

agricultural metaphor about tending to crops and animals (Morgan, 1986). The concept was extended to explain the differences between humans and other animals and then to differentiate culture from nature. One of the earliest English definitions of culture described it as a

> "complex whole that includes knowledge, belief, art, morals, law, custom and any other capabilities and habits acquired by man as a member of society" (Tylor, 1871/1958:1).

In the eighteenth century the words culture and human nature were considered to have the same meaning and the Enlightenment philosophers believed in a common human nature:

> "It is universally acknowledged that there is a great uniformity among the acts of men, and in all nations and ages, and that human nature remains the same in its principles and operations." (Hume, 1748/1994).

However, the philosophy proved impractical, social divisions seemed entrenched and it was felt that certain types of people would always be barbarians. This type of thinking formed the beginnings of nineteenth century racism. In the late Victorian era, racial science was used to explain everything from the origins of African savages to class relations in Great Britain. Race was the reason why white, Anglo-Saxon men - the Ubermensch – or Supermen, were destined to rule the world. Mainstream support for racial superiority disappeared at the end of the Second World War, when the full horror of Nazi Germany's eugenic programmes became clear and post war anthropologists, like Levi-Straus popularised the idea that culture and not race explained human behaviour and differences.

In 1946 the United Nations Educational Scientific and Cultural Organisation race was declared a social myth and not a biological phenomenon (Unesco, 1945:93). Levi-Strauss believed that although biologically human beings were the same they were culturally different. He compared cultures to trains, moving along their own tracks, at their own speed, in their own direction. Every individual is bound up with his culture as a traveller is with his train (Levi-Strauss,1987). Similarly, White (1949) said that

man could not escape the ways of being that culture and history impose on them and Hatch (1997) argued that

> "defining culture as sealed compartments of separate and distinct groups of people allowed the cultural metaphor to be applied to the study of organisations, since by definition, organisations are groups"(Hatch, 1997:204)

4.2 Organisational Culture

The predominant organisational culture of any multinational is usually linked to the nationality of the parent company, which in this case is Japanese. The author explained in Chapter One that organisational culture became popular as a management theory in the 1970's and mentioned the work of French and Bell (1990) who used the metaphor of the organisational iceberg to express the idea of the formal and informal organisation. Above the water line is the formal organisation; below, is the informal organisation, which is shaped by culture, leadership styles, values, attitudes and beliefs. Lewis (2004:275) also used the iceberg metaphor, this time to illustrate the speech and thought ratios of the different national cultures. In the case of the British and German icebergs the section of thought presented to others is roughly equal but for the French, the iceberg shows more ice visible. This means the French speak more whereas for the Japanese, the iceberg is nearly completely submerged, indicating a more introspective nature and minimal articulation of their thoughts.

The argument that we live in organisational societies dominated by global organisations has already been introduced and suggests that national cultures have a limited impact on organisational cultures. Other commentators tend to agree. Morgan (1986: 113) writes:
"Many of the major cultural similarities and differences in the world today are occupational rather than national." Similarly, Trompenaars and Woolliams (2003) accept that organisational cultures and shared systems of meaning may be dominant over national differences and write that

> "Management of culture is now about creating a corporate culture in which people will work together to achieve the organisation's goals, reconciling dilemmas that originate from issues of corporate culture" (2003:101).

However, Hofstede who is a widely cited author in the field of cross-cultural research (Sondergaard, 1994;Yoo and Donthu, 1998) believes that organisational values will only prevail when they are not in conflict with national values (Hofstede *et al,* 1990). Laurent (1986) also maintains that national cultural values will take precedent when they conflict with organisational values. According to Schein (1992), organisational culture exists on three levels: artefacts, values and behavioural norms; core beliefs and assumptions. He maintains that deeper level, core beliefs and assumptions "operate unconsciously and define in a basic 'taken for granted' fashion, an organisation's view of its self and its environment." (1992:6).

Ghosn, Nissan's Chief Operating Officer believes cultural diversity is the key to success. He said,

> "Being global and cross cultural is the way to do business, not just for moral reasons but for business reasons….. A multicultural environment is filled with opportunities. Benefits are gained in open exchange. You learn the most from interacting with people whose makeup is different from your own – from people with a different language, education or social experience" (The Japan Times, May 2005).

He expanded on his philosophy when interviewed for BBC 2's "So What Do You Do All Day?" (Broadcast, Tuesday 25th May, 2004). Reporter Adrian Chiles asked Ghosn how he coped with "the pressure of managing 130 000 people?" Ghosn's answer was typical of someone focused on positive outcomes. To him, the 130 000 employees were people who could supply Nissan with business opportunities. Ghosn is well advised on all areas of the business. People who have made presentations to him remark that he seems to have already decided on the direction he wants to take and listens to confirm his opinion and ensure nothing has been missed. The point is often made that Ghosn listens attentively to what is being said and neither, they add, does he forget. Ghosn went to Japan, prepared to live and adapt to the country, its people and its customs. It was a deliberate ploy: When not at work he is active within the

Japanese community, and more importantly, he is seen to embrace local customs and learn from the experience. He was well aware of the perils of being seen as a foreign aggressor. He explained, "I did not have to tell the Japanese that I liked their country … they could see it." (Magee, 2003:59)

Dominique Thormann, vice president of global communications and investor relations at Nissan says Ghosn, "doesn't believe in cultural clashes. He came here [Japan] and saw Nissan only as a maker of cars and went to work from there" (Magee, 2003:62). This is a clever use of imagery; the focus is on the product, Ghosn knows previous change initiatives at Nissan were de-railed by middle management who blocked attempted change initiatives and he wanted them to be in no doubt as to his priorities. The evidence suggests that Ghosn has managed to implement change because he understands that organisational culture may be the single most important factor standing between success and failure (Morgan, 1989). He has changed organisational paradigms by weaving his own cultural web and meshed stories, symbols, power and organisational structures, control systems, rituals and routines to great effect (Johnson and Scholes, 1997). Communication is key to Ghosn's strategy for change. He uses it as a primary management tool and often gets involved in small details of presentations and press releases.

"You wouldn't believe the level of detail he gets involved in. The message has to be consistent; he understands how one wrong word could derail his efforts. He micro-manages the flow of information within and out of the company and constantly puts himself on the front-line." General Manager Nissan Motors Ltd.

Accompanying an article speculating on Ghosn's successor (Yamaguchi, 2004) are two photographs. One is of Toshiyuku Shiga, the fast rising executive who is said will replace Ghosn, and the other is of Ghosn. The interesting point is that Shiga-san is dressed in a dark, western style business suit and Ghosn is in traditional Japanese costume. Ghosn is dressed in a Kimono, he is kneeling with the palms of his hands resting on his thighs and he smiles the smile of a benefactor. The transition is complete and the message, clear: Ghosn has succeeded, is in control and will decide who runs global Nissan. A new breed of Nissan Directors is being selected, described within the organisation as being young, powerful and trusted by Renault. Board

meetings are no longer the face saving exercises of the past. Japanese Directors criticise, argue and have to defend their positions and reputations. The author wonders whether Ghosn purposely managed his image to be seen to have taken on the mantle of a Confucian elder or whether the Japanese preferred to see him as such, to allow them to accept the unpalatable reforms and changes he brought to the company. An article, published on the company website in 1999 just after Ghosn went to Nissan, reported that one shareholder complained because he felt Japan was being "invaded by gaijins" (Matsumura, 2003). The author has not heard of Ghosn being attacked on a personal level now the company is in profit.

The contention of this discussion is that seeing Ghosn as a teacher elevated his status within Japanese society. Ghosn became someone corporate Japan could learn from, rather than considering him a threat. The Japanese did much the same with the statistician and quality guru, Edward Deming who has been credited with helping to make Japan a global leader in delivering quality goods. Gregory Clarke, president of Japan's Tama University said the Japanese talked about Deming as if he were a god (Magnier,1999). Like Deming, Ghosn's change initiatives became acceptable because it seemed he was acting out of a sense of responsibility for the company and for Japan. Ghosn has been careful in introducing change and senior managers who lost their jobs did so after they were publicly seen to fail to meet their objectives. The stakes are high, as the President of one Nissan Company remarked:

"You can get very rich working for Nissan at the highest levels but you have to deliver. Ghosn has got rid of the old guard. They failed and metaphorically speaking were allowed to fall on their on swords. The people who are managing Nissan now are behind Ghosn one hundred per cent or at least they are behaving as of they are behind him. They are saying the right things."

4.3 Bushido and The Warrior's Code

"Allowed to fall on their own swords," is a passing reference to *Hara-kiri*, or ritual suicide. Hari-kiri, which literarily means stomach cutting is a particularly painful method of disembowelment, which developed as an integral part of the code of Bushido and the discipline of the Samurai warrior class. The point about the Samurai

is relevant because two NTCE European Directors who have attended the Global Executive Training sessions have been told by different Japanese mentors to read Bushido: The Warrior's code by Inazo Nitobe, which was originally published in 1899. Nitobe writes:

> "To understand Bushido and the feudal system is essential to a comprehension of the soul of Japan. Without a working knowledge of them, the moral fibre and idea of present Japan is a sealed book." (2003:5).

The Directors from Nissan Technical Centre Europe were told that the book describes what *"a good Nissan Manager should be."* One Director said he felt as if he was being told the Japanese were *"somehow superior, because of their background and Samurai heritage. A heritage that only a Japanese could understand and appreciate."* The other Director liked the analogy of being associated with the Samurai, it appealed to his sense of position within the company.

4.4 Nihonjinron Literature (Theorising on the Japanese)

Before Japan's economic bubble burst in the 1990's, many academics used to deliberate as to why the country was so successful. Some debated it was due to Japan's late development when compared to the West, others proposed it was because of the application of advanced manufacturing systems and another group tried to explain the success in terms of cultural factors and promoted particular cultural aspects of Japanese life as the root cause. The so-called nihonjinron literature, (theorising on the Japanese) proposed that the Japanese from all walks of life including industries were somehow different (Morris-Suzuki,1998). Nihonjinron literature claimed that the Japanese and Japanese management were unique and was popular in both Japan and overseas and according to Graham (2003:11) "was eagerly devoured by management studies academics and managers looking for an explanation for Japan's phenomenal post-war success.

Japanese management literature focused on motivational techniques, for example Reischauer (1977) argued that Japanese workers were proud to work for their respected companies, wore company pins and sang company songs. Ouchi (1981)

claimed team efficiencies were due to close, honest and open working relationships between people. Vogel (1979) said leaders were devoted to the future of the company and Gibney (1998) considered Japan a true meritocracy, whereby people were promoted through sheer competence and the ability to follow rules. Some of the more outlandish nihonjinron claims include so-called facts about Japanese bodies (Tsutomu, 1987) and brains (Tadanobu, 1978) being different to Westerners. Graham (2003: 11) believes nihonjinron presented a "wholly unbalanced portrayal of Japan" and Wolferen (1989: 347) remarked "it is striking how casually Japanese seem to accept that they are physically "a race apart" from other peoples."

After the bubble there was a backlash against nihonjinron and recent literature has taken a wider, and more rounded view of life in Japanese companies. However it seems few studies have identified and probed employee relationships within the company as will be debated in this thesis. Roberson (1998) in his book about the lives of the Japanese working class) comments:

> "not enough research has attempted to understand (or even just present) company employees and factory workers as people, to understand work and employment in interrelationships with other contexts and dimensions of people's lives as wholes" (Roberson, 1998:11).

4.5 Hofstede's Five Cultural Dimensions

Hofstede (1991) has identified five cultural dimensions, which will be useful as frames of reference for this study.

- Power Distance; "the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally" (Hofstede,1991: 28);
- Uncertainty avoidance: "the extent to which the members of a culture feel threatened by uncertain or unknown situations." (Hofstede,1991: 113);
- Individualism versus collectivism: ranges from "societies in which the ties between individuals are loose" to "societies in which people from birth onwards are integrated into strong, cohesive groups." (Hofstede,1991: 51);

- Masculinity versus femininity: ranges from "societies in which social gender roles are clearly distinct" to "societies in which social gender roles overlap" ((Hofstede,1991: 82);
- Confucian dynamism: ranges from long term orientation to short term orientation (Hofstede,1991: 166).

National cultures influence the ways in which organisations are managed. France is a Latin country; and using Hofstede's classification is moderately feminine, strongly individualistic with a high power distance. In Latin Europe, the Roman Empire was the first large and effective state to be established and Hofstede (2001) argues these early societal experiences have had an ongoing impact on French policies and institutions. The Roman Emperor had absolute power; when the Empire collapsed, Germany invaded France, mixed with the Romanized population and continued with the notion of a supreme ruler (Pierenne, 1939). Even today, in France, hierarchy is seen as existential: superiors are seen as superior persons "Power is a basic fact of society and whose legitimacy is irrelevant" (Martyn-Johns, 1977:350). This is apparent when you discuss Ghosn with Renault employees who have worked directly for him. They hold him in awe. Aron (1969) said that deep within the French collective consciousness is the idea that members of a class belong together.

D'Iribarne (1989) explains how the country's history and the French notion of *honor* affect modern industrial employee interpersonal relationships. He maintains that France has always been a class society; and even compares it with the caste society in India. In his study of production plants within France, d'Iribarne said there are at least three classes: the manager's and professionals, the first line supervisors and the levels below. These classes are further subdivided and the interaction between the classes is governed by a sense of respect for the *honor* concomitant to each class. This concomitant of respect, constrains the types of orders the supervisors can give, implying subordinates have a sense of autonomy for certain tasks. Hence, Ghosn's Management by Objectives programme and his expectation that people have a responsibility for their work.

Contrastingly, Japan is highly masculine, collectivist and has a moderate power distance. The Japanese work concept is very different to the Western view. Sayle (1982) believes Japanese organisations combine the cultural values of the Samurai warrior with rice farmers and this is fundamental to understanding Japanese management philosophy. Rice cultivation relies on intensive teamwork; everyone is expected to contribute towards a successful harvest and if the crop fails, the group fails. Group conformity, respect and inter- dependence and compromise are central to the way of life. There is no such thing as an independent, pioneering rice farmer. The rice culture has been transposed to the Japanese organisation. The Japanese always work best with cultures that will allow compromise and understand the importance of the mechanism. This point is significant when you consider the following example of the initial cultural clashes experienced by the alliance partners.

Nissan employees are also often at a loss in meetings with French colleagues. There are numerous accounts where meetings with the French have disintegrated into separate discussion. For instance, during one meeting the author attended in Renault the French Chairman seemed to completely lose control of the meeting. He walked up and down the room, pontificating as if to himself; gesturing widely with his arms, hands and face. No-one seemed to be listening. His compatriots were involved in seemingly heated discussions of their own. Nissan representatives looked on in amazement. The meeting did draw to a conclusion of sorts but the logic was not apparent. One Japanese Vice President of Nissan described his experience of working with the French as:

"… somewhat difficult. I sometimes wonder if they want to solve a problem or win the discussion. The French always want to win. They want things done their own way."

4.6 Cultural Norms: The Practice and Etiquette of making Presentations

The cultural norms of the practice and etiquette of making presentations also caused initial problems. In Nissan Technical Centre Japan, Japanese engineers were used to listening to presentations in relative silence. Few questions were asked; the slides were crowded with detail and the key points were often underlined for effect. The presenter, who was the focal point of the presentation, read the slides verbatim. The

French had a different approach. They used slides with a minimum of key bullet points. The audience actively debated the points being raised and sometimes they disconcertingly broke into little groups for discussion and, to the Japanese it often seemed that the meetings were breaking down. The presenter was incidental to the debate. In Japan, employees see themselves as collectively belonging to an organisation. Work is about collaboration, interdependence, shared concerns, and mutual help. They are committed to the organisation, often for life and see it as an extension of their family. Caudill and Scarr's (1962) findings show a dominant orientation toward collaterality i.e. working together and cooperating with others more or less on an egalitarian basis in the family, the community and at work.

The author warns against accepting these descriptions at face value. The words suggest secure working relationships but the reality may be different as highlighted by the following episode. He remembers accompanying a Japanese Engineer on a business trip to a factory in the North East of England. En-route we stopped off at Nissan's manufacturing plant in Sunderland to collect some parts. While we were there the Engineer took a smoke break with some of his Japanese peers. It was a lively affair. Afterwards the author asked the Engineer how often he saw his friends from manufacturing. The response was surprising but also enlightening in showing group dynamics to be driven by sense of obligation rather than camaraderie. He said:

"They are not my friends. They are work colleagues. In Japan you are lucky if you have one friend. Someone you can talk to honestly."

4.7 The Rise of the Salary Man

Clark (1979) argues that the Japanese sense of altruism has its roots in Confucianism, a Chinese religious and moral philosophy based on the teachings of K'ung Fu-tsu (551 – 479 B.C.E.). Confucianism, which rests on the individual's relationship with society, the world and heaven, underpinned the ideas of business and commerce in the Tokugawa period. It supports the notion that everyone has a place in society and a responsibility to venerate those above and care for those below. It also demands unquestioning devotion and loyalty from subordinates to their superiors and conformity to the group values. However, Kakabadse et al. (1996) and Wolferen

(1989) both claim the Japanese ruling elite modified Confucian doctrine when it clashed with the needs of a modern Japan. Confucius encouraged men to act morally and refrain from conforming to practices, however conventional, which they judged immoral of harmful. He also expected men to try persuading others to change the convention (Creel, 1953). Wolferen (1989:318) argued that although the Japanese power holders craved obedient subjects they "had no interest in trying to produce moral citizens by invoking abstract principles." The idea that individual's conscience may be in potential opposition to social practise was totally inconceivable." Similarly, the essential tenets of Buddhism, Christianity and later Marxism were proscribed or compromised when they threatened to introduce transcendental and troublesome concepts into Japan.

The new Japan needed entrepreneurs but it was essential that they did not undermine group harmony. It was thought that Western business values were built on individual initiative, determination and avarice. In 1899, the Japanese Government imposed laws that reasserted feudal values, were based on the patriarchal family model and appealed to a sense of nationalism and the public spirit of a revised Confucianism to encourage and marshal entrepreneurial activity (Kakabadse et al.,1996). During the Meiji era, public attitudes to commerce and its practitioners altered rapidly and for the first time businessmen were compared to Samurai. Comparisons continued to be made and encouraged especially after the Second World War when Japan was preoccupied with rebuilding its economy and the expansion of its industrial and commercial bases were seen as crucial to survival. Central to this strategy were the white-collar businessmen, known as salary man (*sarariiman).* They were originally named because of the salary they received as distinct from the wages of the factory workers and other workers lower in the occupational hierarchy. The term salary man connotes much more than the office clerk or white-collar worker it stands for a behavioural norm to aspire to. The salary man has such predictable concerns and habits that it has become common in Japanese to speak of salary man culture.

It is important to note that the managers and engineers, who form the Japanese nucleus of this study, are salary men. They were born in the baby boom, which followed the Second World War, and are now their late forties to mid fifties. At the time of their birth over half the Japanese labour force was engaged in agriculture and

Cummings (2003) believes that many of the beliefs and customs that are fundamental in Japanese culture reflect this agrarian age or at least the familial setting of the mutigenerational household. Large organisations like Nissan were able to force a lifestyle on their employees. The salary man seemed to live for work and was lauded by society. Sedgwick (2000) claims that it was books like Vogel's, *Japan as Number One* (1979) that catapulted the Japanese salary man into the ranks of the samurai as ideal representatives of Japan and in popular Japanese imagery the samurai are considered real men. It may be a popular image but not one that all Japanese share. *"The Samurai were very honourable. I think honour is important. The Samurai were not top of the hierarchy. They were not well paid but they would not white wash anything. I do not think Japanese business man can be like Samurai"* NTCE Japanese Design Manager.

Approximately one third of young Japanese males become salary men. They are all graduates of the Japanese Universities but it used to be the case that even the brightest and the best need a recommendation from someone known by the organisation before he is accepted. The recommendation can come from an employee or University Professor or someone of similar standing. His background and more importantly his past conduct is scrutinised to ensure he is of the right calibre and will be a good ambassador for the Company. The following examples illustrate the point. The salary man is expected actively to demonstrate loyalty to the firm. There are various ways of doing this; the most common way is to work overtime or by spending time with business associates after work. These after work sessions usually include drinking alcohol and it is not unusual to see salary men the worse for wear. Rather than bring disrepute on the company, Nissan forbade employees wearing their distinctive uniforms out of work.

Nissan employees are also expected to represent Nissan on the way to work. Employees who use the complimentary works buses to travel to the Nissan Technical Centre in Atsugi, Tokyo are corralled across roads and along pavements by white gloved, Nissan Security guards as they make their way to the bus depot. Nissan staff must walk in orderly file and not obstruct local inhabitants going about their daily business. Failure to do so means being reprimanded by the security guards and later by your supervisor at work. As one General Manager at NTC observed:

"Japan is like a big fishing village. Everyone reports on everyone else."

The salary man is expected to devote much of his time and energy to the company. Some commentators have argued the Japanese are uncomfortable spending time with their families and prefer the company of other men. Campbell's (1984) study of blue-collar workers in rural Japan refutes this and suggests the phenomenon of salary men working long hours is a relatively recent development. This does not mean that the blue-collar workers are any less serious about their work. A British colleague who works at NTCE and is married to a Japanese lady whose family still live in rural Japan said:

"There is a strong work ethic amongst older Japanese people. Blue collar, white collar and farm-workers are equally industrious. There may be a difference in the volume of work between the groups but the attitude towards work is the same."

4.8 The Cult of Overtime

There is, however, a cult of overtime not only in the Nissan Technical Centre Japan but amongst the Japanese working at the Nissan Technical Centre Europe. Here are some examples from NTCE, which illustrate how the Japanese have developed their own rituals and practices to highlight their commitment to the company.

- Japanese Managers and Seniors will apologise to their staff if they have to leave the office before them;
- More than one Japanese colleague has been known to work until the early hours of the morning and then, rather than make the trip home sleeping on the floor by his desk, waking to start work at 7.00 am;
- It is not unusual to receive telephone calls from NTC, when it is very late into the evening in Japan;
- Japanese staff working until the early hours of the morning, forgoing sleep and driving to a business meeting.

Privately some Japanese do moan about the overtime they have to work but continue to do so. As one Japanese NTCE Director explained:

"Many European staff say Japanese are only interested in the company and in working overtime. This is not true. We also care about our families. We want the best for them. We work this way to give them the best we can. We are responsible for them."

Nissan Motors Limited have recently issued a directive to try and curb excessive overtime and NTC management have been tasked in ensuring that everyone leaves the office early, one day, each week. On one of his more recent trips to Japan the author left the office at 6.00pm and bumped into an ex NTCE colleague on the subway. The colleague, who had returned to NTC to work as a Manager in the Cost Department looked abashed that he had been seen. He apologised: *I am told to leave the office. But still I have so much work to do."*

The salary man is a prisoner of his academic success. Psychologically he is trapped and bound to the organisation for life and in many cases he cannot, or is unwilling to find work elsewhere. Some large Japanese companies are reluctant to accept white-collar workers from other organisations. In the early eighties, when there was a demand for engineers and software developers, a free labour market began to appear but the establishment did not encourage it.

4.9 Mid Career Scouts

In 1988, NTC introduced an initiative called Mid Career Scout (MCS) to recruit experienced engineers from other companies. The numbers recruited were small and the emphasis was said to focus on finding people who would fit the Nissan culture. In 2000 the activity was stepped up because, as reported in the previous chapter Carlos Ghosn wanted more products in the market place and to design products, the company needed more engineers. This time the emphasis was on finding engineers of the right calibre and experience. The author asked a high-ranking Japanese colleague if the new recruits had a problem adapting to the Nissan culture. He answered:

"No problem. They came from other Japanese Companies with similar cultures to Nissan."

Miyamoto (1977) has said that although Japan's national culture influences all Japanese it would be a mistake to assume they are all the same. Japanese colleagues report the way Nissan conducts its business is different to that of Toyota, and Honda. Pascale and Athos' (1982) study of two other prominent Japanese companies Matsushita Electric and its rival Sony confirmed differences in corporate philosophy, business styles and culture. Nissan has also started to recruit engineers from abroad and this is having an effect on attitudes and organisational culture.

"Since the bubble burst or since Ghosn I do not know which, there have been many changes in NTC. Once it was unusual to see foreigners working at NTC – except for people from other companies abroad but now NTC employs foreigners directly. Also it is not unusual for people to leave NTC and then come back. Like in the UK. Now it is accepted. We have to change our way of thinking to accept these changes. We have to work together if the company is to grow" NTC Japanese Manager.

4.10 Individualism and a Sense of Self

In Japan the emphasis is on working together. Mauss (1985) sees individuality as a social construct of western society, a social phenomena which does not exist within Japan but from the author's experience his Japanese colleagues have a firm sense of their individual selves but the way in which they achieve individual status is completely different to that of many western countries. De Vos (1984) says the Japanese view of western style individualism can be equated with selfishness and lack of appropriate respect for the group. Dore (1973) noted self-respect and subordination have different connotations in Japan. Doi (1985) suggests that mutual dependence in relationships removes individual's need to find independent identity. The focus is on one's responsibility to others and maintaining harmonious relationships. Individualistic cultures gain self-respect through competition, which ultimately demonstrates the individual's uniqueness and separateness from others. Morgan (1986) reports that in collective cultures, employees are able to achieve self-respect through service within the system; they are rewarded for dedication and compliance.

The employer and employee are morally bound in a family type relationship, with mutual obligations of protection in exchange for loyalty. Interestingly, Hofstede (2001) reports that only westerners view Japan as being collectivist, other Asian countries consider Japan to be individualistic. In an individualistic society the relationship between the employer and employee is seen as a calculative business transaction in which both parties are self-interested.

Lewis (2004), Bateson (1972) and Fromm (1942/1960), argue that the differences in an individual's identity which underpin national characteristics, begin at birth. The urban Japanese have relatively small families and this means that children are more important to parents than in previous generations. It has also put more pressure on children to succeed. Befu (1974) notes that the emotional and systematic patterning of children which forms the basis of the Japanese personality, contrasts sharply with practices observed in the United States of America. In the West babies are separated from their mothers at an early age and encouraged to develop initiative and solve problems. Contrastingly, Japanese parents keep their children constantly by their sides for the first two to three years. They are often heavily indulged and demanding but in doing so they become completely dependent on human beings close to them and so develop an interdependence, which stays with them throughout their lives.

The key difference between Japanese and American mothers is that Japanese mothers believe that children are born asocial and must be socialised and American mothers believe that dependent children must learn independence as they mature. Caudill and Weinstein (1969) found Japanese infants were significantly less verbal than American infants; this can again probably be attributed to the close relationship between the mother and child. Doi (1962) argues this sense of dependency leads to an adult personality in which submission to authority is a salient characteristic. DeVos (1960) believes the mother/child relationship underpins Japan's success. From the beginning the heavily indulged child is conditioned to feel indebted to his Mother for life. The mother is anxious if the child acts independently. The child senses her anxiety and is emotionally blackmailed into feeling guilty. This sense of guilt is a recurring theme and the child is forever motivated to please Mother by succeeding in life and continuing to belong to the group. Through servitude, Japanese mothers build a mechanism of social control. The wife of one of NTCE's Managers, seconded to

NTC for two years explained how she was called into school one day to help their five year old son make bean bags.

"I didn't have a choice. It was just expected that I went along and did as I was told. The teachers didn't understand; couldn't comprehend that I might have other, more important things to do. The other Mothers were doing what was expected of them and making the right noises. I must say they took it very seriously. "

4.11 Japanese Decision Making Processes

The Japanese sense of identity hinges on group acceptance. This affects them emotionally and influences their opinions and behaviours. Decisions are not only based on abstract or universalistic principals but rather on the basis of anticipating how others may feel. These observations lead into reflections on two Japanese decision-making processes, *Nemawashi* and the *Ringi* system, which have been much lauded but perhaps misunderstood by the West. *Nemawashi* (preparing the ground) is a consensus building stage leading to the decision being authorised, or rubber-stamped at formal meetings as part of the *Ringi* system which is also known as the piling up system. The word consensus, is derived from the Latin *consentire* and defined as a general agreement (the *consensus* of their opinion), as the judgment arrived at by most of those concerned (the *consensus* was to go ahead) or as the group or team's solidarity in sentiment and belief (Merriam-Webster Online Dictionary, 2004).

With *Nemawashi* it is expected that all parties involved prior to the meeting have agreed the decision or countermeasure to the problem. These meetings have been formal, almost ritualistic affairs in adherence to the traditions of the company. Ballon and Lee (1972) say that while older superiors may convey the decisions, they are simply acting as formalizers; younger department heads makes the real decisions. A decision is never made without the groundwork being done to ensure the support of their superiors, peers and occasionally subordinates. Everyone who is likely to be affected by the result is consulted in the *Nemawashi* process and asked to support the proposal. Wolferen (1989) says the Japanese use the word consensus to make it appear that there is genuine agreement because everyone involved in the process is

given the opportunity to object to the proposal. In reality he says, dissenting voices are neither welcomed nor encouraged. Japanese style consensus limits involvement and individual opinion because nobody will take the risk or the trouble to challenge the wishes of the group, or the group leader. The *ringi seido* is a document for formalising the decision making process. Richardson and Ueda (1981) report that:

> "decisions are often initiated at the lower or middle echelons of the firm. These proposals are passed along the hierarchy collecting seals of approval or undergoing minor revisions on the way up to the president" (Richardson and Ueda, 1981:9)

Elsewhere, Graham (2003) describes the *ringi* system as slow but once a decision is made it is quickly implemented since people are less likely to contest a decision they have been involved with and all potential problems are seen to have been resolved. Although Wickens (1995:55) agrees that decisions are quick to implement he describes the *ringi* system as "a method of reverential enquiry to determine that your plan is in line with what your boss desires" and debates the difference between consensus producing a decision and consensus around a decision. He also sees consensus as an excuse for inaction, because so many people are involved the process is slow and often indecisive and once a decision is made it is difficult to get people to change their minds even if it is detrimental to the business. This may be because there is reluctance to go against a superior or group, or to go through the process again or because of a need to save face. Tsuji (1969) sees the *ringi* system as a mechanism that compels pseudo family relations and says it is a superb mechanism for diffusing and finally absolving individuals of all responsibility.

Cusumano (1985) makes an interesting point about Nissan and consensus in his book: The Japanese Automobile Industry when writing about Nissan's alliance with Austin Motors in 1952. The then President of the company, Genshichi Asahara wanted to supplement the existing Nissan range with a bigger car, of which the company had no experiences of making. Asahara, unlike some of his colleagues, believed it acceptable to copy other company's designs without acquiring technology rights thought technology to be a "product" which could be bought and wanted a tie up with Austin Motors. There was no argument or discussion, he forced the deal and Nissan built the Austin A50 which seated five and was powered by a 1489cc (1.5 litre) engine. When

the tie with Austin ended in March 1960 Nissan introduced its own compact, the Cedric, which was modelled in part after the A50. Cusumano writes:

> "Contrary to popular myths about the style of Japanese, neither he (Ashara san) nor his predecessors and successors were inclined to run the company by consensus. To substantiate his position he commissioned a study of the 1288 Austin cars registered in Japan, most of which had been imported during the 1930s, and collected reports on the car from the United States and Europe. These material indicated that the Austin was an excellent vehicle with an especially good engine. Asahara then decided to go ahead with the tie up and announced his decision at a board meeting, even though he knew that Kawamata and several engineers opposed it. There was no debate over the matter since it did not seem that anyone would be able to change Ashara's mind." (Cusumano, 1985:89)

Peters and Waterman (1982) note that successful US organisations use positive reinforcements to motivate and reward employees to become winners. It could be argued that Nissan works on the threat of exclusion from the group. The author once worked very closely with a Japanese Engineer who was seconded to NTCE for three years. He was in his early thirties, married with one small child. Rather than live in the Japanese enclave in Milton Keynes he lived on the outskirts of Northampton. He explained:

"I chose to live there because I want us to experience the British way of life. Our neighbours invite us into their homes. We meet their families. Go to their parties. We learn about being British. If we live in Milton Keynes we would be expected to mix with other Japanese. Expected to fit in."

It was also noticeable that at lunchtimes at NTCE the man in question ate his meals with local staff rather than his Japanese colleagues. It helped that he spoke excellent English and was able to engage in conversations but six months before his scheduled return to Japan he started to lunch with the Japanese and rebuild relationship. When asked about his change in behaviour he explained: *"No choice. It's expected…."* This raises the concept of *honne- tatamai,* and the individual.

4.12 The Concept of *Honne- Tatamai*

Tatamae is the public face, the façade a person adopts and can be a set of agreed principles or rules. *Honne,* the private face suggests that although individuals in the group may assent to the *tatamae,* each may have their own motives and hold different opinions to those expressed publicly. Tobin (1992) believes that it is essential for the Japanese to learn how to use *honne-tatamai*. The Japanese regard the inability to distinguish between *hone- tatemae* as immature and some, view westerners as transparent simpletons because they are unable to hide their motives (Graham, 2003).

The author once facilitated at a workshop in NTCE involving Japanese, British and Spanish Senior Management. The Europeans raised the subject of *honne- tatamai,* saying it was detrimental to working relationships and encouraged their Japanese colleagues to enter the zone of uncomfortable debate. On reflection it was a rather blunt and culturally naïve attempt to break down barriers. Doi (1985) construes *hone-tatemae* as a social cultural construct of Japanese society and ideology. Tobin et al. (1989) show that pre-school children lack the skills of differentiating between the private and public face. Schools encourage children to become sociable and co-operative and reward them for suppressing their real thoughts and play the role expected of them.

A further example of *Honne- Tatamai* is when the author worked with a Japanese colleague in the Design Department and together they agreed the countermeasure and plan to a rather difficult technical problem. The following day the Japanese Engineer denied having made the agreement. This astounded the author but the engineer was unapologetic. His Japanese Manager had told him that the proposal was unacceptable and rather than lose face he had realigned his views those of the Japanese management stream at NTCE. This behaviour is not unique to the Japanese. Goffman (1990) referred to similar behaviours when explaining how people in Anglo-American societies present themselves in everyday life and used the terms "front regions" and "back regions." Regions are barriers to perception in which: "The performance of an individual in a front region may be seen as an effort to give the appearance that his activity in the region maintains and embodies certain standards" (Goffman, 1990:110)

whereas, any behaviour which might discredit the fostered impression are relegated to the "back region"(Goffman, 1990:114).

4.13 The Japanese and Education

Education, as already discussed, is very important to the Japanese and has a direct impact on business. School children are taught that Japan's economy must continue growing and that a favourable balance of trade is the only way for the country to survive. It is not uncommon for young children to study until the early hours of the morning and the pressure for a child to succeed is enormous. Failure to pass entrance exams and then get into the "right" University means he will not get one of the top jobs.

Tsuruta (2003) believes that globalisation and the need for Japan to remain competitive is driving educational reform in Japan. The school system was seen as too rigid and the university system too lax (Cummings, 2003). From April 2002 new teaching guidelines were introduced which encouraged children to be interested in learning and to think for themselves. The curriculum was also reduced by around 30% and the school week to five days. There has also been a shake up of the Universities. It seems that many see the University years as "a kind of moratorium between the horrendous rigour of school examination hell which precedes it and the routine life of the company employee which follow it" (Goodman, 2003:23). The aim is to get children to think for themselves rather than to learn by rote. However, the author believes that one of the major benefits of the old "Japanese" education system is that it taught the salary man how to pay attention to detail and prepare for meetings.

The author has accompanied high-ranking Japanese colleagues on many fact-finding visits both to European suppliers (including Autoliv, TRW, Takata – Europe and Petri) and competitors (including Mercedez Benz, BMW, Fiat and Renault). In each case the Japanese had been well prepared. They knew the background of the companies they were visiting and about their products and sought answers to key questions. These questions had been formulated before hand and usually were the result of group meetings held in Nissan Japan. British Engineers, the author included, tend to think of questions as the discussion develops. His Japanese colleagues listened, made notes and asked questions of their own (usually for clarification of some point

or other) but the emphasis was on getting the answers to the key questions. Another insight is that in preparation for the Knowledge Management meetings relating to this study the author sends a copy of the presentation and relevant material to colleagues in NTC before hand. In each instance, the Japanese have produced copies of the presentation at the meeting. The copies are heavily annotated. Some of the notes are direct translations of the English text; others are questions. The same thing happened when the author sent advanced copies of Safety Strategy Presentations. This may be a matter of the Japanese working in a foreign language but it says a great deal about their attention to detail.

Cummings (2003) believes that Japan is a society where status is based on educational background, rather than class or birth. The following example suggests the importance the Japanese place on educational achievement but also on the secrecy, and "pecking order" that surrounds that achievement. Not long after the formation of the Alliance the head of Renault Human Resource (HR) Department visited NTCE. To prepare for the visit the British Deputy Managing Director NTCE asked the author to prepare a resume of the company management team. It seemed a simple enough request. Name. Age. Background. Qualifications etc.   Surprisingly, the information was not immediately available through the company HR Department. The exercise came to an abrupt halt when the author questioned the Japanese Manager of the Electrical Department. He seemed flustered by my request; said he was and that he would get back to me. Fifteen minutes later the Deputy MD withdrew his request. The Japanese Manager had contacted the Japanese MD and he had brought pressure to bear to stop the activity. One of the Japanese ladies in HR explained:

"We are not allowed to ask which University they are from. Sometimes we know but they try to keep it a secret. It is enough that Nissan employs them. They know if they went to the same University as someone else. They are like a club. Also there is a ranking of Universities in Japan. Our previous MD went to the best University in Tokyo. The one we have now did not. He went to the second best."

4.14 Organisational Subcultures

A Japanese Engineer at NTCE diplomatically informed the author that cliques based around membership of the university the engineers attended – called *gakubatsu* - most certainly exist within Nissan Japan. His reluctance to disclose details emphasised the political strengths represented by these cliques and also the cultural deference to authority. Graduates from Tokyo University are recognised as the elite, many enter the ministries or are employed by leading businesses like Nissan. The same engineer admitted that Ghosn's Japanese advisors are mostly Todai (Tokyo University) graduates. Ghosn is said to enjoy the intellectual challenge they offer however, some consider them to be too intellectual and to lack a pragmatic business sense. NTCE's current Managing Director, one of the main benefactors of this study, is also a Todai graduate.

Subcultures, like the *gakubatsu* can be very strong and can sometimes undermine the host culture particularly within the alliance where members already have divided loyalties between Nissan and Renault. Sub cultural divisions may also arise because organisation members have different professional backgrounds as in the case between the different functional groups within Nissan Technical Centre, Japan where some groups are considered to be doing a higher status job than others i.e. Between the Engineering and Administration Departments. Divisions also exist within Engineering Division and the importance attached to the job of a Chassis Engineer is deemed to be higher than that of a Trim Engineer or Seating Engineer. When the author was senior engineer for NTCE Seating and Restraint Systems (1992-1997) he recalls being surprised at the depth of analysis a Japanese NTC engineer had made in writing a report about the installation of a side airbag in a front seat. A Japanese colleague explained

"In NTC engineers who work in the Engine and Chassis departments are more highly regarded than other engineers. The engineer who made this report is trying to show how good he is."

4.15 The Japanese and the Long Term View

The Japanese are said to take the long-term view. Caudill and Scarr (1962) and Suzuki (1970) both report that they are primarily orientated towards the future in that they readily accept change. Privately, Ghosn is said to have been surprised at the turnaround at Nissan and the flexibility of his Japanese workforce but there are some interesting historical and cultural parallels. When it suits, the Japanese have shown themselves able to adapt to changing circumstances very quickly. Takeshi (1983) believes they are able to adapt quickly because they do not hold any strong religious beliefs, which would fuel moral indignation and intellectual argument. Wolferen (1989:318) made the same point and called the Japanese "ideological chameleons" and used the example of how the Japanese attitude towards the Arabs changed after the oil crises from "disdainful indifference to sycophantic solicitude" to make his point (Wolfren,1989:320).

This same argument is used to explain why Japan entered the modern industrial world with relative ease compared with China and the other Asian nations because it allowed them to "believe one thing and do something else entirely" (Wolferen, 1989: 318). Commenting on Ghosn and the rapid changes made at Nissan a Japanese Manager said:

"In Japan we have a saying. A tree always bends in a strong wind. That is why the tree remains standing."

4.16 Organisation Man

The West had its own salary men. Whyte (1956) coined the term organisation man to describe upwardly mobile corporate employees who were intent on working their way up through the hierarchical layers in large organisations. Whyte's study provided sociological evidence about the growing conformity of American company men and a rise of a social ethic which subjugated the individual to the group. Each step of their careers were planned and acknowledged in advance, loyalty to the organisation being repaid with job security and steady progress up the corporate ladder. The idea that people had careers was relatively new in the fifties. Dahrendorf (1959) suggested that for the British middle classes having a career was the supreme social reality. It was

the focus of their lives and gave them the long term financial security they were looking for. In the Nineteenth Century the middle class figure was an employer, a manufacturer, merchant or professional, usually working in the family business. During this time, ownership was the supreme social reality and not "career."

The Second World War had confirmed the permanency of large organisations as economic and social entities that were mobilised by managers to support the war effort (Sampson, 1995). Burnham (1940) noted the transition from a capitalist to a managerial society and showed how managers were taking over as the ruling classes in both capitalist and communist countries. Pension plans, investments and progressive salary increases in a job for life, gave organisation man a sense of security in that he was able to guard against the unforeseen and accumulate money that could be enjoyed at a later stage in life. This was in complete contrast to the working classes who, despite the welfare state were first to be laid off in an economic downturn. In English society the middle classes had careers, workers had jobs.

NTCE Directors were born in the mid to late fifties, most of the managers in the sixties and seventies; nearly all have working class roots and the majority university degrees. James (2006) argues that although we live in a society that frowns on judging individuals on their birth, education or possessions, the majority of the British population are middle class. In 1900 it was calculated that the middle classes comprised of a tenth of the population; by 2000 it was nearly two thirds (James, 2006). For many nations the period between 1950 -1973 was the golden age of growth. Britain and USA were already relatively wealthy in 1900 but gross domestic Product (GDP) per head per population between 1900 and 1987 increased six fold in members of the OECD (Organisation for Economic Cooperation and Development), the sixteen wealthiest nations in the world, fivefold in Latin America, three fold in Asia and sevenfold in the USSR. The world has been transformed by affluence, leisure and technology; the aspirations of individuals have also changed dramatically. James (1998) notes that although society became more affluent in the years 1950-1990 its sense of overall well being did not, and for some groups it actually decreased. People wanted more; they were not prepared to settle for what they had and went in search for something better in the name of self realisation. Inevitably such changes affected their patterns of social comparison. The most fundamental change was an increase in

upward comparison and in Western culture, people felt constantly pressurised to continually improve on their abilities (Halpern, 1995).

One of the triggers for change was when Governments realised that education was crucial to economic growth. After 1950, in most developed nations there was a substantial increase in secondary and higher education. Between 1950 and 1980 it almost doubled in France and Japan. In Britain, before World war II, one in eight school leavers went on to higher education, in 1998, it was one in three (James, 1998). Academic standards may still be in question but the competition at the top end for jobs has never been tougher and in many cases it starts at birth. In the West, individualism supplanted corporate loyalty when job security disappeared (Gunn and Bell (2002). Short term gain has replaced the long term view that had characterised middle class attitudes to career and financial planning. Increased aspiration and individualism have made employees more jobs focused, more eager for promotion, increased responsibility and better pay. Also the percentage of people with higher qualifications has increased the competition for managerial and professional positions. The stakes are higher, there are more people chasing fewer jobs.

"I started work as an apprentice in one of the shipyards in the North East. My Mum and Dad were really pleased. I thought I had a job for life. I thought I would live there. Bring my family up there. It didn't happen. The shipyards closed but I was lucky. I got a job with Nissan. It was a job with prospects. Of course, we had to move south. My Mum and Dad weren't happy. They wanted to see their grandkids grow up, but I got my promotion." NTCE British Senior

4.17 Conclusion

This chapter has debated and compared the different models and typologies that help frame the study and its grounding in organisational culture. It began by exploring the philosophical background of the word culture and then considered the impact of organisational cultures, leadership and change management programmes within Nissan and used examples to illustrate some of the key cultural characteristics of the impact of the change and working with the Japanese that the author will use to inform his strategy. It has shown that Nissan's management philosophy has to be understood

in a cultural-historical context. It was once paternalistic, highly traditional and deferential where the welfare of the individual is strongly linked to that of the organisation and the nation but this may be changing because the system of lifetime employment for Nissan employees and the salary men is crumbling and many of the Japanese interviewed in the course of this study reported that the younger generation of Nissan engineers had different values and may not be as willing to commit their lives to one company.

The chapter also explained that Carlos Ghosn has managed to implement change because he understands that organisational culture may be the single most important factor standing between success and failure but warned that his leadership style may be driving conflict underground and creating a superficial appearance of harmony. It also informed that reader that NML Board Meetings are no longer the face saving exercises of the past and Japanese Directors criticise, argue and have to defend their positions and reputations and that a new breed of Nissan Directors are being selected, described within the organisation as being young, powerful and trusted by Renault. The author does not claim to have looked at all the factors influencing organisational culture at Nissan and admits to finding it difficult to separate the strands between national and organisational cultures rather the discussion and illustrations have been reflective and highlight some of the different agendas, which operate simultaneously at normative, social and psychological levels to impact national and organisational cultures. In this chapter the author made the following theoretical and practical contributions to knowledge.

4.17.1 Theoretical Contributions to Knowledge

- Nissan management philosophy has to be understood in a cultural-historical context. It was once paternalistic, highly traditional and deferential where the welfare of the individual is strongly linked to that of the organisation and the nation but this may be changing because the system of lifetime employment for Nissan employees and the salary men is crumbling.
- Previous change initiatives at Nissan were de-railed by middle management.

- The Japanese have elevated people like Carlos Ghosn and Edward Deming into the position of Confucian elders to make it psychologically acceptable for them to be led by *gaijins*.

- Organisational cultural norms of making presentations and holding meetings cause conflict, distrust, frustration and sometimes misunderstanding in a global organisation.

- The Japanese approach to face saving and *hone-tatamai* can lead to distrust in a multi-cultural setting.

- Japanese group dynamics may be driven by a sense of obligation rather than the camaraderie as suggested by the literature.

- The salary man's commitment to the company is his way of providing for his family and he is not, as the literature suggests putting the company first.

- Subcultures, like the *gakubatsu* can be very strong and can sometimes undermine the host culture particularly within an alliance where members have divided loyalties.

- Although Japan's national culture influences all Japanese companies it is incorrect to assume they are all the same. Nissan conducts its business differently to that of Toyota and Honda.

4.17.2 Practical Contributions to Knowledge

It would be useful for researchers and practitioners to

- Compare and contrast the meaning and boundaries of employee obligations in a multi cultural context and its effect on organisational development.

- To understand how the way in which society is organised impacts the organisation and organisational behaviour especially in a global context

- Consider the effect of how organisational cultural norms of making presentations and holding meetings manifest themselves in a global organisation.

The next chapter will examine the impact of organisational culture on knowledge management and learning at Nissan.

Chapter Five

The Impact of Organisational Culture
on Knowledge Management and Learning at Nissan

5.0   Introduction

This chapter looks at how organisational culture impacts knowledge management and learning within Nissan, debates and challenges some of the related literature and further explores themes introduced in previous chapters. It also explains how the key Nissan research and development procedures and processes evolved into the "The Nissan Way."

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│  │ and framework for the study    │  │
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5.1   Managing Knowledge at Nissan

Nissan is serious about managing knowledge. The company has Knowledge Managers in each of its technical centres, although the scope and role of each manager is different depending on the location. In Nissan Technical Centre Japan, there is a Manager responsible for Knowledge Capture and Sharing and another responsible for Knowledge Creation. The Manager in Nissan Technical Centre North America has a role similar to the author, who covers all aspects of knowledge management at Nissan Technical Centre Europe. The purpose of managing knowledge is to improve the efficiency and effectiveness of the company and for the Nissan Technical Centres that means cultivating "efficient development capabilities" and enable the "effective creation of innovation" to become a world leader in technological advancement (Matsumura, 2004). Carlos Ghosn has said the company needs to be a learning organisation, emphasising the need to improve the quality of Nissan products in design, engineering, manufacturing and sales. He said the strength of the company lay in *Gemba,* or in knowing what happens in the actual workplace (Matsumura, 2004).

The concept of *Gemba* is well understood within Nissan. One of the first things engineers are taught when they start working for the company is the value of the word *Sangenshugi,* which literally means the "3-real-isms." In Japanese, SAN means "3," GEN means "real" or "actual," and is also the first character of GENJITSU, GEMBA and GEMBUTSU (or "reality," "actual place" and "actual item) and SHUGI means "ideology." Harriman (2004:1) describes Sangenshugi, "as a commonsense, scientific approach to problem solving" and paraphrases the philosophy as understanding "what is really happening (GENJITSU) but going to the actual place (GEMBA) and checking out the actual item (GEMBUTSU)." The message is not only about the importance of knowledge and continuous learning but also about the development and application of knowledge in "real" situations. In short it is about managing knowledge and learning.

Gemba is about understanding the context of any situation and knowledge is context specific and contextual (Nonaka and Takeuchi, 1995). The principle of *context* is about going to the workplace and seeing the work as it unfolds (Whiteside and Wixon,

1988) and is the first and most basic requirement of Contextual Inquiry. According to Beyer and Holtzblatt, (1988:66), the four principles of Contextual Inquiry are

- *Context:* Watch the "work" happening;
- *Partnership*: Talk about the work while it happens
- *Interpretation*: Find the meaning behind the customer's words and actions;
- *Focus*: Challenge your entering assumptions.

Ghosn recognises knowledge is a key competitive asset which forms the basis of a firm's growth (Grant and Baden-Fuller, 1995) and sustainable competitive advantage (Kogut, 1993). The Nissan Renault Alliance expects that both companies will learn from each other and thereby gain competitive advantage over their rivals (Grant and Baden-Fuller, 2001, Mitchell and Singh, 1996 and Kogut and Zander, 1992). It is primarily about knowledge acquisition and learning and is what Hamel et al. (1989) call the learning race. Kanter (1994) considers collaborative inter-firm know-how a key business asset and Barlett and Ghoshal (1989) argue that part of that learning is in understanding and responding to environmental complexities and competition. Judging from the balance sheet for Fiscal Year 2003, having sold a record number of 3,057K units globally with an operating profit of over 825 billion yen Nissan has learned, and is continuing to learn how to absorb and use knowledge.

Cohen and Levinthal (1989:569-70) define absorptive capacity as "the firm's ability to identify, assimilate and exploit knowledge from the environment." This definition has three components, in that first knowledge has to be identified and valued as being important, secondly, it has to be assimilated and thirdly, the reference to exploitation, in the context of business is that it has to be applied to commercial ends. Numerous writers have indicated that learning can occur and knowledge can be stored at multiple levels of analysis e.g. Walsh and Ungeson's (1991) concept of organisational memory focuses on non-human repositories such as systems, structures, rules and routines. Levitt and March (1998:319) note that "organisations learn by encoding inferences from history into routines that guide behaviour," Argote and Epple (1990) call for systematically repeating an action and studying its consequences and both Schein (1998) and Simon (1991) concentrate on individuals as being responsible for bearing

and storing knowledge. Although each of these approaches is valid, Carlos Ghosn is only interested in the bottom line and this is key to understanding the dynamics of how knowledge is currently managed at Nissan. Bottom-line thinking is quantifiable, the implication being that unless changes can be shown to have a healthy return on investment they should be disregarded. The use of the term knowledge management is indicative of bottom line thinking as it is a managerial mindset that suggests that knowledge can somehow be managed and measured. Addleson (2000) writes

"the rhetoric of the bottom line is a privileging narrative that stipulates that only the views of experts are relevant to organizing and to assessing the "goodness" of organisations." (Addleson, 2000: 233)

In short, businesses are about making larger profits for shareholders and are managed by a select few whose views are the only ones which matter. Aldrich and Whetten (1981) and Walsham (1993) argue that the Knowledge Management literature tends to be heavy on the notion of negotiation and trust between people but light on power and interdependent relationships. Their argument is that dominant views of knowledge work are superficial as they neglect institutional power relations that are hierarchical, competitive coercive and exploitative. These views may be overly negative and from a pragmatic point of view a condition of consensual coercion and exploitation may be necessary to ensure the business meets its objectives but it is important when trying to manage knowledge to examine extrinsic and intrinsic motivation on both the individual and the group because people as already discussed are the conduits of knowledge (Osterloh and Frey, 2000).

The Nissan Revival Plan (Fiscal Year 1999 – 2002), Nissan 180 (Fiscal Year 2002) and the Nissan Value Up programme (Fiscal Year 2005 to Fiscal Year 2007) all contain simple and measurable targets. Nissan wants to be seen as a value creating company aiming to increase its value in a number of ways including customer benefits, costs, products, services and company performance. Growth, sustainable profitability and double figure operating revenues are planned to maintain a minimum of 20% return on invested capital. Nissan's management focus is primarily on profitability and Carlos Ghosn's strategy for the company hinges on the success of his management team. Addleson (1995) argues that this Comtian-Cartesian view of

management, known as modernism or positive empiricism, whereby the manager is seen as operating in a mechanistic world, controlling events and fixing problems as they occur is the dominant Western management style. At first glance this approach may seem at odds to some of the literature about management practises in Japan. Theories X and Y have been used to characterise the different managerial styles (McGregor, 1987). Theory X managers, said to be typical of Western management are authoritarian, can be confrontational and permit little if any discussions on their decisions. Theory Y managers, which is said to be the dominant managerial style in Japan respect their staff, encourage and give scope to their creativity and assume they are self starters.

Whilst the author recognises these as different and conflicting managerial traits and accepts that Nissan's management style could be described as Theory Y the model needs further debate and contextualisation before it can be properly understood. The reason Nissan has been able to quickly assimilate and adapt to a seemingly alien management style is because behind the rhetoric the organisational culture has always been elitist and this has had a direct effect on knowledge management and learning within the company. The majority of NML Directors and Managers started their careers as engineers and whilst this might not necessarily be so for all Nissan companies it is fair to assume that the dominant logic of the company is that of the engineer.

> "Dominant logic is a conceptual framework for thinking about the processes and results of cognitive simplification in top management teams" (Bettis and Wong, 2003: 343).

5.2 Dominant Logic and Nissan

Prahalad and Bettis (1986) who originally coined the term said dominant logic is the shared understanding and the strategic mindset of the top management team or the dominant coalition. Dominant logic develops over time, as organisations grow and become more complex it becomes necessary and important to establish formal structures, procedures, systems and processes that reflect and strengthen the existing web of relationships and conform to the dominant logic of the company. Controls,

such as reward systems, metrics and decision rules are put in place to assure compliance with the dominant logic and organisational learning becomes focused on developing current competencies because of the consistent biases of the top management team. Schwenk (1984) suggests that top management attempt to simplify decision-making to give the illusion of control but in doing so decrease their ability to appreciate the true complexity of the problems. Nissan engineers pride themselves on being logical and rational and of making decisions based on data and facts. It is a language that engineers have to learn quickly if they are to appear credible. It is also a language which has associated behaviours like looking thoughtful, being serious, appearing calm and collected, of being dependable and in control and it is how engineers believe the organisation works. Kim (1993) calls these images, "mental models" and says that these models arbitrate what information is acquired, retained, used and deleted but most importantly

> "they not only help us make sense of the world we see, they can also restrict our understanding to that which makes sense within the mental model" (Kim, 1993:39).

Senge (1990:174) defines mental models as "deeply held internal images of how the world works." The organisation communicates its mental models internally through established standard operating procedures, organisational culture, assumptions, artefacts and overt behaviour rules that characterise the organisation (Kim, 1993). Communication is the medium through which knowledge is created or disseminated, a process that is affected by culture. Intercultural communication, has been defined as "the symbolic process in which people from different cultures create shared meanings" (Lustig and Koeste, 1992: 52). These images have a powerful impact on our framing of behaviour because they affect what we see and what we guide others to see and result in a mindset that is accomplished largely in the absence of conscious control. Kellerman (1992) argues that

> "tacit or implicit learning refers to unconscious processing, an automatic and naturally occurring cognitive activity. In tacit learning, knowledge is acquired implicitly, held tacitly and used unconsciously. Behaviour that becomes a routine quickly becomes a habit" (Kellerman,1992:294).

The more our unconscious is primed with a lens that influences our new view, the more permanent the lens that influences our seeing (Fiske and Taylor, 1991). Many researchers, including Bettis (1991) and Miller (1990; 1994) have argued that the failure to discard or "unlearn" old dominant logics is one of the main reasons why organisations fail to change despite seeing changes in their environment. Firms that can unlearn and reframe their past success programme to fit with the changing environment and situational conditions will have a greater likelihood of survival and adaptation (Lyles, 1988). Nissan's failure to adapt in the nineties was largely due to the unbending mindsets of the Company elite and the dominant mindset of the engineer has been protected, encouraged and nurtured partly by a belief in the security of lifetime employment.

5.3 Lifetime Employment

Hasagawa (1986) and Sasaki (1981) both believe that lifetime employment or *shushinkoyo* is the reason behind Japan's success story, in that it strengthens management and fosters company loyalty. Other writers, including Watanabe (1993), Hamada (1991) and Plath (1983) disagree. Schlender (1994) maintains that while Japan has the world's most efficient manufacturing plants, its management practices including lifetime employment, consensus decision-making and hierarchical organisations based on seniority have resulted in bloated and inefficient company bureaucracies. In the past, Nissan preferred to recruit new graduates rather than experienced people trained elsewhere which is not uncommon in Japan. Inohara (1990) reports that the criteria for screening applicants within Japanese companies are more social than economic in nature, the key point is that their personalities are such that they will culturally fit for lifetime employment with the company. This provides a strong justification for firms to invest in the training of their workers. The assumption of lifetime employment is that people are recruited for a career, rather than a particular job hence selection is about the potential employees' ability to learn and a general grounding in their subject rather than acquired skills. In the mid nineties, fifteen-million of the forty-million full-time workers in Japan were employed in public enterprises and large firms, like Nissan. This strategic minority, which included the salary men, believed they had a job for life

The origins of lifetime employment are debatable. Shirai (1992) claims the system was introduced to benefit high-ranking personnel in state run enterprises in the late part of the Meiji Period (1868-1912) whereas Woronoff (1992) believes the practice originated after the Second World War. Whatever its origin it is worth considering how lifetime employment affects knowledge management and organisational learning. Hasagawa (1986) maintains that although, in principle, a Japanese employee may expect promotion and wage increases in relation to the time he has spent working for the company, it is not guaranteed. The Japanese recognise the fact that as a man matures his technical and work life experiences increase and become more valuable to the company and this is reflected in his salary and status within the company (Inohara, 1990). In respect to Nissan, these definitions are only partly true. The salary man gets remuneration appropriate to the effort he has expended over the years of working for Nissan. It is not paid for through the efforts made month to month but for the total contribution he has made to the company.

"It was usual that a young man worked long hours and contributed to the company in excess of the money he was paid. As he got older his contribution may not have been as high but his wages still rose because of the years he has worked at the company. The wage rise can be explained because he has earned the money over the many years he has worked for Nissan. It was not unusual to see the older guy sitting with his feet on his desk or reading a paper but with Ghosn that has changed. Now everyone is rewarded based on his contribution. Because of Ghosn, I have missed out on salary increases I would have received naturally because of my age." NTCE Japanese Director, in his mid fifties.

It often appears that the Japanese are only interested in company efficiency and not individual self-fulfilment and Hannam (1993: 42) contends it is not uncommon for Japanese workers to "work extra hours voluntarily, just for the good of the company." Whilst he is prepared to differentiate between "working long hours" and "spending long hours at work" and accepting that Japanese staff may feel it inappropriate to leave the office before their boss and also recognising that they might lose face in their local community if they arrive home too early he maintains they often put the

company first. This is not fully supported by this study which found that the Japanese work long hours to secure their futures and provide for their families.

"I have heard British Engineers say that all we think about is the company. That we have no lives. That we do not want to spend time with our families. This is not true. Of course we want to be with our wives and children but this is how we provide for them. This is our responsibility." NTCE Japanese Director

Dore and Sako (1998) predicted that there might come a time when shareholders would demand higher profits and force Japanese companies to make redundancies. At the time it seemed a remote possibility that it would happen but Nissan is not the only company to have made changes and the end of lifetime employment has had a significant effect on Japanese society. McNeill (2004) claims that Tokyo is now one of the suicide capitals of the world. Suicides in Japan rose dramatically after the collapse of the Japanese bubble economy and in 2003 the number rose to a record of 34,427. This number was heavily weighted by middle aged and retired salarymen, more than 70% of the suicides were males aged over forty with financial problems cited as the main reason for the suicide. In the current climate fears relating to job security provide some of the biggest motivating factors for Japanese engineers. Baker and Stauth (2003) believe contemporary fear always fits into one of two categories: fear of not having enough and fear of not being good enough.

> "Having enough and being good enough are the two factors that best ensure survival, so fear about them is rooted to the core of the neurological fear system" (Baker and Stauth, 2003:24).

5.4 Job Security

"You cannot ask the Japanese what motivates them individually. We are a homogenous society. To ask such a question threatens their safety in the group. They might be different. The most important thing to Japanese is job security. It's the security of keeping his or her favourite job. Usually the job is the same with or very similar to his or her current job. Due to the unique labour custom in Japan: long service for the same company from joining to retirement, respect to seniority and in

many cases less aggressiveness of self career development. I have experienced very frequently at appraisal interview in NTC that engineers say "I would like to continue the current job and reinforce my skill and overall capability for promotion to next job rank." And they ask: "Please tell me how." NTCE Japanese Director

The phrase *"less aggressiveness of self career development."* Used in the previous quotation does not imply that Japanese engineers are not interested in career development, only that they approach self promotion and self enhancement differently. Ting-Toomey (1999) suggests verbally that collectivist Asian cultures are generally self-effacing rather than self-enhancing. Survival in Nissan depends on maintaining harmonious relationships and promotion depends on impressing their bosses. Japanese engineers are more circumspect in promoting themselves. *"I would like to continue the current job and reinforce my skill and overall capability for promotion to next job rank."* Whilst admitting they are interested in promotion, they are not so bold as to pretend they are already proficient in their current job: That decision can only be made by their superiors, hence the plea for patronage, *"please tell me how."* The author wishes to point out, that capability aside, from his experience, promotion in Western companies also depends on maintaining harmonious relationships with the "right" people but in the West, dissatisfied and ambitious employees can easily move on to develop their careers in other companies and until recently that option has not been available to Japanese engineers.

"Now, it is not unusual for people to leave Nissan if they want. If they see opportunities else- where they leave. They work hard. Maybe they think Nissan is not treating them properly so they leave. Sometimes they come back to NTC, like in the UK. Once this would never have happened. The standard of engineer at NTC is different. Before the standard was much the same. Now some are better. Some are not so good. People maybe only used to use one part of the brain, now some people are thinking wider." NTC Japanese Manager

Remembering that Nissan has mainly recruited its salarymen from the engineering departments of top Japanese Universities and that these people would have attained the same level and have similar capabilities it was not surprising to hear him say that

"before the standard was much the same." However the implications of this have perhaps not been so transparent because in such circumstances it is quite difficult to promote self on the grounds of technical capability so the ability to maintain harmonious relationships with their bosses becomes paramount because it was the only way they could promote themselves and secure their futures.

5.5 Global Executive Training

Nissan high-flyers who are seen as future managers have always been rotated through key departments in order to increase their knowledge of the business and to test their abilities. In the past promotion has, in part depended on belonging to the right University cliques or *gakubatsu,* as explained in Chapter Four. Ghosn has cleverly introduced another control model, this time built around Global Executive Training. The GET model is instantly recognisable to the Japanese as an alternative to the University model, one which incorporates the important socialising aspects of Nissan's organisational culture and by extension the socialising elements of Japanese national culture, and preserves the mechanism by which social capital is developed within the company.

Lebas and Weigenstein (1986) in their study of control systems based on national culture assert that the collectivist tradition in Japan operates as a natural cultural control. Managers are frequently rotated; the emphasis is on building, and maintaining a human network across the organisation in order to facilitate team working and decision-making. It is important for the managers to know who to contact in the relevant departments. This communication network is tremendously important and the development of social capital requires extensive and systematic socialising processes (De Meyer, 1991). The manager's status and power is based on developing connections, and to be seen to win favours and support from key individuals within the company. Carlos Ghosn allows this to happen but personally vets everyone the executives recommend for GET training. Nominees are requested to go to Japan to make business presentations to Ghosn and his first line team. Ghosn uses these presentations to "interview" potential GET candidates. He asks probing questions, designed to elicit responses which indicate individual thought patterns and mindsets

and to see how they react under pressure. People who have been under the spotlight have described it as "nerve racking" and "intense."

"You have to be on your toes. Ghosn is very well advised. You get the feeling he has already made up his mind before he asks the questions. It sounds as if he wants to know what you are thinking but really he wants to know if you agree with him."
British NTCE Manager

"GET is elitist. It is only open to a few. It's like a club. And to be a member you have to behave in a certain way. The training is structured to see how you behave. In one of the exercises you have to pretend you're the newly elected CEO of a company and they want to see how you prioritise your workload. In another exercise you have to play different roles you could be expected to take within the company. Everything you say and do is analysed.   You're given a list of expected behaviours and attributes. You're also watched at work. You're constantly on show. Not behaving in the way they expect means your career is derailed. That's what they call it: Derailed." British NTCE Assistant Chief Vehicle Engineer

"GET training is very difficult for the Japanese. It's very American. It is about the individual and his career development. It is about promoting self interests as well as the company but I believe it is the best way for Nissan. We must take the best of Western and Japanese Management styles to make Nissan successful."
Japanese NTCE Director

Kopp (1994) in his survey of Japanese, European and US subsidiaries indicated there was a "glass ceiling" for host country nationals within multi-national companies. That is no longer the case within Nissan; GET training maybe elitist and it is certainly only for a small percentage of people. At the time of writing, only 150 out of approximately 2500 managers are on the GET training scheme, (these figures include three of the sixty managers at NTCE) but it is open to all nationalities. The springboards to promotion into management, higher levels of management and ultimately into GET and the highest level of management are the aforementioned V3P initiatives (Value Up of Product, Process and Programme). Primarily they are said to

be about improving company efficiency and effectiveness but they are also management development tools.

"V-Up is a kind of test …… it gives people an opportunity to work across companies. To show what they are capable of. Also if someone is not so confident, or does not know who to talk to in other companies then V-Up gives him the opportunity to make contact." NTCE Japanese Director

These initiatives are about raising the profiles of people who will eventually run the company. They are about developing people who can report, present, debate, argue, reason and ultimately behave in a way the company wants and is prepared to reward. They are also about developing and building social networks of ambitious people who will facilitate and manage the necessary change. Gulati (1999) observed that deeply embedded social networks are valuable tacit resources but it is not only the managers of the company who develop these networks. Although every graduate employed by the company can reasonably expect to be considered for a management position, not everyone makes the grade and engineers tend to specialize when they are in their mid thirties and become the company's technical experts.

These people are usually employed as senior engineers or team leaders and in Nissan Technical Centre Japan some have been promoted to managerial levels responsible for technical detail leaving the management of the business to their more career- oriented peers (Appendix 4). Nissan charges its technical experts with writing standard operating procedures which cover the key aspects of design and development. These people are conduits of learning responsible for converting tacit into explicit organisational knowledge (Nonaka and Takeuchi, 1995). This however, assumes that those with the knowledge are willing to share their observations and experiences (Inkpen and Dinur, 1998) which is central in terms of this study.

5.6 Key Nissan Research and Development Procedures and Processes

Nissan's R&D business revolves around the following procedures: Master Schedules, Design Reviews, Planning Drawings, Nissan Engineering Manuals (NEM), Nissan

Design Standards (NDS) and Nissan Engineering Standards (NES) which are linked by process. According to the Collins English Dictionary (1991: 1238)

"A procedure is a way of acting or progressing in a course of action."

"A process is a series of actions that produce a change or development."

5.6.1 Generic Master Schedules

Nissan has developed a series of Generic Master Schedules for the different cases of Vehicle Development. These schedules are time related and are used to monitor development, from the initial concept through to Start of Production. The Master Schedule comprises sub-schedules, the different departments or organisations operate in order to build vehicles. These sub-schedules interconnect with each, which can be viewed as complex maps, or as a series of input – output process models. These processes are used to make more detailed plans which, in turn support the overall activity. The different prime activities on a Master Schedule include: Styling, Design Concept, Production Specification, Sourcing, Cost, Quality, Vehicle Layout, Weight, Project Support, Homologation, Power train and Launch Strategy.

In general terms Nissan Technical Centre Europe needs twenty-six months from styling freeze, where the style of the car has finally been agreed to start of production (SOP). In comparison, Nissan Technical Centre Japan, using the same milestones develops vehicles in eighteen months. Palmer et al. (1999) report that Nissan emphasised the development of enabling technologies such as international information technology standards, computer supported collaborative working technologies, knowledge based systems, virtual reality and simultaneous engineering activities in design and development of the Nissan Almera launched 2000. Since that report these initiatives have been further developed, changed and re-badged under a variety of acronyms, some of which, like WIN have already been introduced (Chapter 2:33). Others include: the aforementioned V3P, ANPQP (Alliance New Parts Quality Procedure), GTOP 21 (Global Purchasing Systems) and G2B (Group Global Bill of Materials).

By 2007, it is expected that Nissan Technical Centre Europe will have a similar capability and working at the same level as Nissan Technical Centre Japan and developing vehicles within ten months. To achieve this, NTCE needs to be working to the same processes as NTC. Putting aside, for one moment the obvious reasons of company efficiency it is also worth noting that NTCE needs to work to the same processes in order to survive as an independent and interdependent company. If it does not, NTC will find ways of working without NTCE and questions will soon be asked about the value the company offers global Nissan.

5.6.2 Design Reviews

Design Reviews are used to guarantee the performance and reliability of both systems and components prior to design release and the manufacture of parts. Reliability cannot be guaranteed by physical testing because a potential failure ratio of 0.5% would require testing at least two hundred parts, which would be unrealistic in terms of both cost and time. Design Reviews are used to

- Level the quality of design at an early stage
- Identify risks and weaknesses in design and introduce countermeasures
- Reduce development time by reducing trial and error
- Confirm target achievement of Quality, Cost and Delivery before each build
- Make a judgement if it is OK to proceed to next stage
- Capture Nissan Know How

Seven Design Reviews are shown on the Master Schedule for a Case III project but the responsible Design Manager for the system or component can hold as many reviews as he chooses to assure design. (Figure 5.1) For Case III projects, the vehicle platform (chassis) and engine will be designed and developed by the Nissan Technical Centre in Japan but NTCE will be responsible for the design and development of the rest of the vehicle.
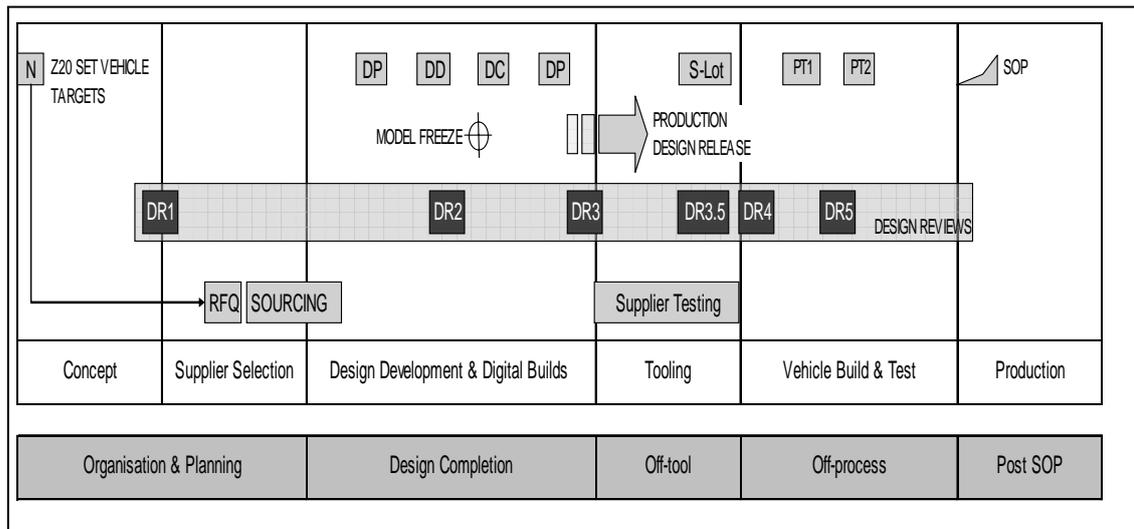
Figure 5.1: The Design Reviews for a Case III Project

(Note Design Review No 6. is Post Start of Production and is not shown)

Each Design Review has a different purpose but basically they cover the following elements. (Figure 5.1)

- Clarification of System Requirements e.g. From point of view of the customer, engineering and manufacturing
- Identification of new and changing items of the system e.g. New specifications, function, structures, materials, process and supplier.
- Understanding the impact and eliminating the risk associated with new items using analysis tools like Failure Mode Effect and Analysis and Fault Tree Analysis.
- Evaluate the design to confirm that all the systems requirements can be achieved
- Ensure past concerns are not repeated.

	Stage	Purpose
Virtual	DR #1	Review the design concept – does it achieve the system requirements? Focussed on the Concept Sheet concept.
	DR #2	Confirm all engineering requirements are satisfied within the styling condition **before Model Freeze.**
	DR #3	Confirm that the design achieves all QCT requirements before initial Production Spec Tender & Design Release.
Physical	DR #3.5	Confirm that S-Lot parts satisfy the design intent and can be used for the trial.
	DR #4	Review the achievement of all CQT requirements based on S-Lot evaluation. Confirm all countermeasures are included in PT1 design release **before PT1 refine & D/N cut-off.**
	DR #5	Review the effectiveness of PT1 countermeasures and that all CQT requirements are achieved. Confirm all countermeasures are included in PT2 design release **before PT1 refine D/N cut-off.**
	DR #6	Review system performance in the market.

Table 5.1: Purpose of Design Reviews

5.6.3 Planning Drawings.

Planning Drawings are used to specify design against a given set of vehicle targets and can be made at different levels i.e. for performance, vehicle, system and components.

- Examples of Performance Planning Drawings include:- Fuel Economy, Ride and Handling, Safety, NVH, Aerodynamics and Weight.
- Examples of Vehicle Planning Drawings include:- Platform, Engine Bay, Interior and Luggage Room.
- Examples of System Planning Drawings include:- Cockpit Module, Fuel Systems, Front End module (including lamps) and Safety Systems (Active and Passive Safety).
- Examples of Comment Planning Drawings include:- Seat, Seat Belts, Combi-Meter, Headlamps, Sun Roof and Transmission Control.

The term Planning Drawing is a misnomer. Originally, it was the name given to a layout drawing showing the part in *situ.* The drawing was annotated with relevant information but over time it became impracticable to capture all the necessary information on the drawing and a separate file was made to supplement the drawing. For whatever reason, the file and layout became known, collectively, as the Planning Drawing. This provides a complete history and background to the drawing in which

all inputs are captured and problems encountered during the planning drawing process recorded. The idea is that the Planning Drawing becomes a history file, forever being updated through experience of subsequent model development. Once vehicle targets are agreed and disseminated, work on the Performance and Vehicle Planning Drawings start simultaneously, transcribing the targets into design. Work between the two drawings is co-ordinated and information on one made to support relevant information on the other. Once these are issued, work on the Vehicle and Component planning drawings commence. Again, work between relevant Planning Drawings is co-ordinated and monitored through a series of sectional and departmental meetings. There are four levels of planning drawings, each one with a different objective, the higher the number the greater the level of specification and design detail.

5.6.4 Nissan Engineering Manuals (NEM)

A Nissan Engineer refers to three main standards to make a Planning Drawing: Nissan Engineering Manuals (NEM), Nissan Design Manuals (NDS) and Nissan Engineering Standards. NEMs exist for the majority of vehicle components. These manuals are the culmination of design and technical know-how. Their purpose is to improve the quality of work through:-

1. Standardisation of development work:
   - To prevent variations in design quality due to differences in skill and experience between persons in charge of its design;
   - To prevent any item from being omitted from the planning stage.
2. Estimation of performance:
   - To estimate the performance of the component/system in order to reduce the cost and time required for development.
3. Improved efficiency of development work:
   - To standardise examination methods to improve development efficiency.

These manuals are intended to be codified technical accounts of knowledge recorded to assist the designer and ensure best practise. It is intended that they be used in conjunction with each other. The manual sets the standard for taking out part numbers,

explains symbols used on the drawings and describes the different components used to make up a seat belt assembly and where they fit in the car. The manual also details how components should be designed into the car to meet the legal regulations of countries in which the final vehicle will be sold. Components are shown in relation to mating parts, with the necessary clearances and fixing/anchorage points. There is also a section showing how to benchmark the proposed installation with that of Nissan competitors. The Planning Drawing Manual provides a template for the planning drawing process. It is a step-by-step guide to the organisation and production of a Planning Drawing with examples to illustrate each point. Checklists are lists of items to check against given standards. They are derived from previous experience, usually mistakes made during the design and development of previous vehicles, and are divided into four main areas: Laws and Regulations, Clearance Checks, Operation and Construction.

5.6.5 Nissan Design Standards (NDS)

The NDS stipulates the test methods and relevant judgement criteria for the component. The tests are designed to show that the part meets legal requirements and to replicate real-life conditions through a range of temperatures and endurance cycles.

5.6.6 Nissan Engineering Standards (NES)

The NES is the standard reference document. There are three types of Nissan Engineering Standards:- one for the basic design (NES-D), another for materials (NES-M) and a third for tool steels (NES-T).

5.7 The Nissan Way

The resultant procedures became known as "The Nissan Way," not only was the company learning from experience, it aimed to capture and codify those lessons in procedures. Day (1994: 37-52) argues organisations need to remember what has worked for them and why, otherwise they will have to "rediscover their success formulas again and again." Nelson and Winter (1982a) and Levitt and March (1998)

have described the codification of knowledge into rules that guide behaviour as the "crystallization" of organisational knowledge. The important thing about procedures is that they are used regularly, remain relevant and are kept up to date. Cyert and March (1963), Levitt and March (1998) and Nelson and Winter (1982) have referred to this type of procedures as tight scripts.

However, within Nissan Japan the scripts are "loose" and seen as guidelines, working with culturally understood parameters for an activity; or *shikata,* a standard way of doing things. These loose scripts, written around the Master Schedule are used to encourage dialogue between interested parties and informal job specifications and procedures are used as teaching materials where context is understood through discussion. Miller (1993) said the organisations weed out unsuccessful practices and build "architectures of simplicity." In NTC, they build architectures of complexity which are understood through complicit internal coherence rather than externally applied logic. It is only through talking and working together that people will learn the tacit as well as the explicit knowledge. By examining the use of the aforementioned schedules, procedures and standards we can see how these loose scripts have been applied and show how this approach leads to confusion and inefficiencies in a global company.

Experience of NTCE Senior Engineers of working in NTC Japan

"I wasn't told what to do. You learn very much on the job. Asking people: Is this right? No one tells you this is the way to do it and it isn't in the NEM. There are underground NEMs. All the people involved know about them but they're not available to outsiders and I suppose that's what we are: Outsiders." NTCE Senior Engineer (1)

"There are local networks where best practise information is being collected and shared. I only found out by talking to a Japanese colleague. He told me there was a best practise for design HVAC. [Heating and Ventilation]. *It was different to the NEM. They've been working to this new standard for quite some time. Every one working in*

HVAC knows about these standards. They are passed on by word of mouth." NTCE
Senior Engineer (2)

The scripts informed on the what, when, who and how of vehicle development but not
the all important "why." The "why" was retained by the experts and it was only in
consultation with them that the rationale became evident. The "why," wrought by
experience, became the source of expert power and the foundation of the engineers'
prestige and reputation within the company. The engineers guarded this knowledge
because it ensured their position and made them valuable to the company. To
maintain the currency of this knowledge it was claimed to be superior to other
technical knowledge. Peers, anxious to maintain their own credibility and power bases
as experts supported this claim and it became authorised as the "Nissan Way" of
doing things.

*"These guys really know their business; they know the NEMs inside out and have so
much experience. They put things together and make connections. It's almost like a
sixth sense."* NTCE Engineer

The NEMs and NDS are sometimes confusing, contradictory and misleading as might
be expected from translated documentation and indeed, on the front page of all NEMs
and NDS is the cautionary note:

> "The translation of this technical document from Japanese may have required the use
> of English phrases that may be inaccurate when compared to the intent of the original
> Japanese document. The reader should consult the original Japanese document to
> confirm accuracy."

The author has done so on numerous occasions and working with a translator, or a
Japanese colleague it has transpired that the original document is also confusing,
contradictory and misleading. Often, it has been impossible to discuss the NEM with
its originator because he has often left the company, through retirement, redundancy
or movement to another section. Once an engineer moves to another section he is
reluctant to get involved, or to answer any questions saying it is no longer his

responsibility. They are frightened of becoming embroiled in conflict and being blamed for mistakes.

"There is definitely a blame culture in NTC. People don't like to commit to anything in case something goes wrong and they get the blame. I had an instance when something I did went wrong. My Japanese senior asked me why I had done it? I said I thought it was right and I had checked it with him. He denied it. Said it was the first he'd heard of it. Fortunately I had an email from him saying it was OK. I showed him the email and nothing more was said." NTCE British Engineer working in NTC Japan

Sometimes it is impossible to trace the originators of the NEMs or talk to people who would have been involved in the process because the originating section has been disbanded.

 "I was a member of the Vehicle performance group. We were an elite group. We knew the vehicle and understood design. It is typical of NTC. Many people were envious of our group. Our knowledge, so they split the group up and the knowledge was lost forever. Now they realise they have made a mistake." NTC Japanese General Manager

This insight touches on the competitive and political rivalry that exists within NTC. A rivalry which has a detrimental effect on how knowledge is managed and in this case lost within the company. In the Nissan Technical Centre - Japan, knowledge is embedded in social networks and central to these networks are technical and managerial experts. The experts are recognised by the company, and because of this recognition they recognise and value themselves and each other. Nissan is about them as "individuals" and their efforts have made the company successful. This insight provides an interesting paradox: Ghosn promotes global Nissan as a learning organisation but the very people who have made the company successful also hinder its development as a learning organisation. The focus of becoming a learning organisation is to become more profitable and to survive in a complex and changing world. It is a strategy for competitive advantage where learning is said to be reciprocal

and happens as people interact with each other which presupposes an organisation where people are open to other points of view. (Senge, 1990).

Sethi et al. (1984) claim Japanese companies have a great difficulty in integrating foreigners into their decision making process because much of it is based on cultural norms and political manoeuvring within the organisation. Sethi's claim was originally made in the context of managers in overseas subsidiaries of Japanese companies but it is equally true of what is currently happening with NTC. For *"foreigner"* read new starter of whatever nationality. They may well understand the cultural mechanisms at work but they have not been indoctrinated into the social and political networks that give them access to the information they need to do their jobs.

"Since the bubble burst or since Ghosn I do not know which, there have been many changes in NTC. Once it was unusual to see foreigners working at NTC – except for people from our companies abroad but now NTC employs foreigners directly. We also employ Japanese engineers who have worked for other companies in Japan. We have to change our way of thinking to accept this." NTC Japanese Manager

In March 2004, NTC's knowledge sharing group surveyed NTC engineers asking how they learnt about the job. Those surveyed included graduates, team leaders, managers and recent recruits from rival car manufacturers and other companies. The survey showed that the engineers relied on job procedures, check lists and information about the previous models to do their jobs. It also showed a distinct lack of codified processes and procedures and highlighted, once again that they relied on their social networks and "word of mouth" to understand what was required. The survey concluded that the engineers wanted detailed written procedures and recommended that "it was necessary to translate the "know how" of the expert into explicit knowledge" (Takahashi, 2004). This finding contradicts previous comments made by Japanese managers and threatens to undermine the political power base of Nissan's original salary men and perhaps, not surprisingly the knowledge sharing group is finding it difficult to capture and codify its expert knowledge

"Two years ago we tried to get important knowledge out of the heads of experts and onto paper. It was very difficult. It was not possible to explain the preconditions that we need to understand the knowledge." NTC Japanese Manager (1)

"It is difficult for us to capture all knowledge. We tried to do this with the suspension group. There were three experts in the group. They all approached the job in different ways. They had different ways of doing things. They did not agree with each other." NTC Japanese Manager (2)

The exercise was abandoned because of the magnitude of the job, and the differences of approach and opinions of the design experts. They could not reach consensus about what was best practice and the Knowledge Management group would not make a decision, which might challenge or alienate any of the design groups. This reluctance to challenge the status quo results in each section being managed in a different way.

"Each section makes its own process. It is not always written down. We do not have a standard way of making a process. If a process crosses other sections or departments we decide on a lead section to make the process. Then the process is offered to others to follow. The Japanese do not like to follow best practise. But this causes problems. Although the sections work well as individual sections, they don't always have a process. It is done by word of mouth. The problem comes when it comes to working with other sections. It is not clear. Things get missed. Mistakes are made. So many mis-communications and inefficiencies." NTC Japanese Manager (3)

Ghoshal (1987) has reasoned that geographic diversity and exposure to new environments should lead to innovation and increased organisational capabilities. Bennett (1993) modelled the overall willingness of global organisations to engage in other cultures and their readiness to transfer information and knowledge across borders. The model has two levels – the ethnocentric and ethnorelative. According to Bennett, ethnocentrism is the assumption that one's own culture is central to all reality. Rosinski (2003:31) takes the definition further: "there is no evil intent, simply a naïveté or lack of awareness of culture." The enthnocentric level can be seen as avoiding cultural difference, either by denying its existence, by raising defences

against it or by minimising its importance (Bennett and Bennett, 2002). The ethnorelative level is where people experience their own cultures in the context of other cultures. Bennett argues that global organisations need to move to the ethnorelative level to increase organisational learning. Nissan has not fully succeeded in moving past the ethnocentric level.

Cerny (1996) reports that many large multinational companies fail to transfer practices across organisational units due to the firm's lack of operational experience and knowledge of local market conditions. In Nissan's case it is not because they lack operational experience and knowledge of local market conditions but rather, the Japanese, who have worked overseas have a cognitive dissonance between the reality of management, work and knowledge being different when working with foreigners and when working in NTC. It sometimes seems that the flexibility of working abroad is disposed of when they return to NTC because knowledge learned abroad is not valued or it would destabilise the status quo and undermine the organisational culture. Inkpen and Crossan (1995) argue that the dominant logic of organisations often curtails the learning opportunities of working in foreign countries.

One of the major challenges facing global organisations is to develop processes and policies that will more effectively integrate the knowledge and experience of their management team who have worked in subsidiaries abroad (Berhut, 2001; Birkinshaw, 2001). In Chapter Two the author explained that when Nissan began its global expansion programme in the eighties it seconded teams of experts on foreign assignments to start up its overseas subsidiaries. These teams were expected to instruct locals in "The Nissan Way." There was little in the way of codified processes and it seems this practice is not uncommon amongst Japanese companies. Negandhi and Serapio (1991) studied twenty-seven Japanese manufacturing subsidiaries in the US and found that the parent company had provided very few processes.

From the author's discussions with colleagues at NMUK and from his own experience at NTCE the Japanese brought across procedures and forms. Often, the procedures had not been translated from the Japanese and although the forms were the same as

used by NTC, they were adapted for use by local staff with 'Japlish' instructions written alongside the Japanese characters. Japlish is a contracted form of "Japanese English." It is recognizable as an English word, and is used by native Japanese speakers, especially for those utterances that are strongly modified, or influenced by rules of Japanese grammar (Wikipedia: The Free Encylopedia, 2004). The company encouraged and expected a certain degree of empowerment, initiative and self-organisation and it was left to NTCE and NMUK staff to decide on the detailed process, about how things should be done locally.

"I've been with the company for eighteen years. When I started we were building Bluebirds. That's how long ago it was. Nothing was written down. We had to write our own processes. The company was flooded with Japanese staff, we'd ask them and if they didn't know they'd phone hone for help. I used to think they had a help line in Japan where Japanese engineers could phone and ask for help. Like a control mentoring system to get expert advice. Perhaps that's what we need now." NMUK Senior Engineer

"I was here when the company started, one of the first employees. I started as an engineer and was surprised that nothing was written down, not in English anyway. The engineers had NEMs and NDS [procedures] *but we didn't have any processes telling us how to manage the business. The Japanese knew how it was done in Japan but it was all in their heads. I worked with one of the Sokats* [Japanese Engineer] *and wrote it all down. What we didn't have, we made up. We put all the documentation in Company Manuals. I don't think they've been opened since."* NTCE Director.

Key procedures like the NEM's and NDS etc. are considered sacrosanct and have to be rigorously applied which is sometimes difficult when the content is unclear. In effect, they are historical documents of what worked for the company in the past but their slavish application has strangled innovation, learning and the use and creation of new knowledge within Nissan because the logic, learning and rationale underpinning the procedures is not always understood. Sull (1999) believes that good companies, which continue to focus on doing what worked in the past, will soon become bad which is not necessarily so, if what worked in the past is relevant to today.

Arrow (1974) argues that in trying to improve efficiency by making decisions based on past experience may lead to rigidity and unresponsiveness to effective change but the decisions based on a limited understanding of past experience are also potentially damaging to the company as the author knows from bitter experience.

Some years ago he was involved in the development of a new Airbag System for one of Nissan's Vehicles. The relevant NEM and NDS detailing the airbag construction and test methods were seemingly inappropriate for the current design. The man who had written the NEM had been retired from the company and with no expert to refer to, decisions were made which proved costly and nearly delayed the project. It soon became obvious why the NEM was written the way it was and had we understood we would not have encountered problems. Experiences like these make engineers reluctant to challenge the NEM. Exploration is the degree to which a company accumulates new knowledge and exploitation is the leverage of existing knowledge but engineers need to feel secure in themselves and their environments to be confident enough to explore and exploit knowledge.

Leonard-Barton's (1992) study of new product and developmental processes found that that it was difficult to change the value systems embodied in a firm's existing core capabilities (author's note: or lack of them) suggesting organisational barriers to changes may stifle innovation. March (1991) contends that to succeed, organisations need to engage in both exploitation and exploration. Exploiting known alternatives may have more certain outcomes but it can also mean opportunities are missed. One of the ways to raise the technical capability of engineers at NTCE is to follow the lead set by NTC Japan and use the Nissan Engineering Manuals as spring-boards for deeper learning as illustrated by the following story.

 "NTC engineers told Nakamura san [General Manager and Chief Vehicle Engineer (CVE) for C Segment vehicles] *that he could not have the fuel tank he wanted in P32L* [code name for a new vehicle] *and still meet the NEM specified ground clearance. Nakamura san asked for a cross section of RAV 4 to see how Toyota overcame the problem. It showed that Toyota were prepared to have less ground clearance than specified in the NEM. Nakamura san said the RAV 4 was for sale*

worldwide. He also rattled off the figures. He told them to change the NEM and six pens came out. Everyone in the room agreed to change the NEM because he said so. No questions asked. They respected his judgement. They knew his history. Knew the jobs he had had in Nissan. They respected his engineering opinion." NTCE British General Manager

Symbolically, the story is illuminating because it informs us of the importance of leadership within Nissan. Nakamura san was leading by example and showing NTC engineers how NEMs can be and should be challenged and changed based on a deep understanding of a competitor's vehicle. Interestingly both the man telling the story and the man he was talking about are GET trainees

5.8 The Changing face of Knowledge Management at NTC

In August 2004, the British Management team of NTCE Design Department proposed a V- Fast activity to develop external training modules for instructing new starters in core design and process knowledge. A V-Fast activity is one that can be completed in one to two days. The Japanese Managing Director rejected the proposal saying it was the senior engineer's job to develop their staff. This is a fundamental difference of approach to training and learning between Britain and Japan. White and Trevor (1983) observed that training by technical and managerial staff occurs with much greater frequency in Japanese firms operating in Britain than in most European factories.

Dore and Sako (1998) argue that although Japanese firms may compare badly with British or American firms against criteria which looks at training expenditure and man-hours in formal training they excel in being able to motivate individuals to learn to perform their present and likely future jobs within the firm. They also say the Japanese feel morally obliged to be good at their jobs and argue it is a product of their history and culture. Japanese firms rely more on mutual teaching and on the job training (ojt) than on courses provided by training firms or outside consultants and are often seen as learning organisations because of this high level of mutual teaching, which happens with the introduction of new processes and products and also in the form of pre-programmed induction sessions. Mutual teaching and on the job training

implies that learning is ongoing for everyone. It is also expected that senior employees will help newcomers to learn. Teaching is seen to be part of a manager's or seniors' job and is rewarded by respect and deference. The manager or senior is also judged on his ability to develop others.

Japanese employees are expected to be highly motivated and willing to update their skills and acquire new ones to benefit the business rather than for personal gain (Dore and Sako, 1998). Van Maanen and Schien (1979) argue that the socialisation of group members influences the institutionalisation of knowledge but in NTC exclusion from the network means engineers are no longer able to access the information they need to do their jobs and they become marginalised and their job security is threatened. Loose scripts are a predetermined cultural control which emphasises the different ways power is reflected in procedures in Japan and the UK. Japanese procedures perpetuate a network of relationships where the power remains with the chief stakeholders whereas the British procedures have an authoritative function where the power is embodied within the issuing authority.

"The British always want a global policy. Always ask for global procedure. They want to be told what to do. They want to follow a process. In Japan engineers just get on with it. They deal with the practicalities." NTCE Japanese Manager

NTCE British engineers want the procedure to understand and debate what is expected of them and they expect to be given all the information to do the job and understanding why is an important part of the process of learning. The view of Japanese management is somewhat different as they expect British employees to act within predetermined guidelines and do not understand why they should need to know about something that has been decided by the management on their behalf. There should be trust that the company (working through the senior management) have taken everything into account before asking the engineers to do something. Hasegawa (1986) claims that the traditional tendency in Japan has been to make corporate decisions from bottom up rather than the top down. He argues that this allows everyone to feel as if they are contributing and so raises the morale of all employees. March (1992a) agrees to the point that middle managers are able to influence strategy

and do play a central role in making day-to-day decisions but maintains that not everyone is involved in the decision making process. The evidence suggest that it is a fallacy to suppose everyone feels as if they are contributing to corporate decisions and argues that by "bottom up," management actually means it is hearing the voices of the selected few and even then, these voices are often, self censoring.

 "I do not understand the westerners need for hierarchies. Always you need to be told what to do. The Japanese do not like or need hierarchical organisational trees. NTCE engineers expect top down management. People want to be told what to do. In Japan management is bottom up. Japanese engineers see the real job. Practically they know how to do the job and get on with it." NTCE Japanese Director

"I have to be very careful when I am talking to Otomo san. [NTCE Japanese Director] *I do not always agree with him. I can ask maybe one or two questions but no more. He makes his position very clear."* NTCE Japanese Senior

This calls into question Hannam's (1993:44) definition of the Japanese management system of consensus as the "management by the consensus of a group rather than management by hierarchy of individual managers." For Hannam, consensus does not mean everyone is in agreement but it does mean everyone is involved in the process. He reasons employees will respond positively to consultation because it shows that others value their opinions and expertise. The author believes that whilst everyone appears to be involved, these group meetings are theatres for the performing elite and dissenting voices are quickly squashed or marginalised. Involvement means to concur with the direction of the company elite.

 "The most frustrating thing is that they won't make decisions without asking their team leader or senior and sometimes he'll even have to ask his manager. Whereas I'll make a decision and tell my senior about it afterwards they'll have to talk to someone higher. It's very frustrating. A Manager in NTC will not talk to you or acknowledge you directly. He'll talk to the senior who will talk to the team leader who will talk to you." NTCE British Engineer talking about his experience of working in NTC

Heaven and Child (1999) argue that the Japanese are status oriented, emphasising and honouring prescribed power based memberships and this influences their preferred style of cultural communication and determines who talks to whom, what information and knowledge is shared and even decides who is allowed to determine what new knowledge is and it also determines how that information is communicated. Different nationalities have a preference for different communication styles and these are culturally determined (Trompenaars and Hampden-Turner, 2003). Gudykunst and Ting-Toomey (1988) report that the British prefer to have clear, meaningful, exacting conversations whereas the Japanese prefer a succinct style of communication, characterised by understatements, meaningful pauses and silences. This last observation needs challenging, whilst the British may prefer to have clear, meaningful and exacting conversations the Japanese working at NTCE complain that the British are often too polite and the intent of the conversation is far from clear.

"The British are far too polite. Thinking too much about how things should be said. We do not understand what you are trying to say. Please speak simply." NTCE Japanese Director

Similarly, it may seem that the Japanese prefer a succinct style of communication, characterised by understatements, meaningful pauses and silences but this may be because they are unsure of the relationship. Where the relationship is secure the understatements and meaningful pauses are accompanied with encouraging or discouraging grunts and the associated body language. Some research has shown that at least 65% of all communication is non verbal (Harrison, 1970), other research has shown it to be 75% (Trompenaars and Hampden-Turner, 2003) and yet another study places it at 93% (Mehrabian, 1968). The percentages may be questionable but according to Bolton (1991) few people dispute the general direction of the findings. All nationalities have preferred communication styles and rely on body language to manage impressions, convey messages and emphasis meanings but these are not always easily understood cross culturally. Japanese Managers claim Japanese engineers *"know what is expected"* and *"get on with it"* but this view is not necessarily shared by British Managers.

"I agree that when Japanese Managers or Engineers come to me with a problem they also offer one or two countermeasures. The countermeasures are very well thought out but they struggle when I leave it to them to decide what to do." NTCE British General Manager

Japanese engineers are able to read the body language of their Japanese Managers and it helps them to deliver and say what is expected. Trompenaars and Hampden-Turner (2003:157) believe organisations are subjective constructs whose employees "give meaning to their environment based on their own cultural programming" and have defined four types of corporate cultures which vary considerable in how they think and learn, how they change and how they motivate, reward and resolve conflicts. The four types can be described as

1. The Family: Hierarchical, power oriented corporate cultures in which the leader is regarded as a caring father figure responsible for his subordinates.
2. The Eiffel Tower: Hierarchical bureaucracies with clear divisions of labour and a boss who is to be obeyed.
3. A Guided Missile: Egalitarian, task-oriented and cross disciplinary. This type of organisation does whatever needs to be done to get the job done.
4. The Incubator: Where the organisation serves as incubators for its employees self expression and fulfilment.

Japanese companies are said to have family cultures because they recreate and mimic aspects of traditional family within the organisation. These types of organisations tend to be high context, which refers to the amount of information and cultural content which is taken for granted by organisational members. Trompenaars and Hampden-Turner (2003) argue

> "the higher the context the harder it is for outsiders to feel that they belong or know how to behave appropriately. Such cultures exclude strangers without necessarily wishing to do so and communicate in codes which only members understand. (Trompenaars and Hampden-Turner, 2003:160)

This insight has a tremendous impact on the strategy to raise the capability of NTCE. The way knowledge is communicated, acted upon and accumulated in NTC is embedded in social networks. Levitt and March (1998) understand knowledge as a collective set of assumptions about organisational actions and their consequences. It is a "collective" set of assumptions implying people need to be part of the collective to have access to the knowledge. Hedberg (1981) contends firms gain new understanding in accumulating knowledge by associating actions and their consequences. The argument is that learning involves testing and reflecting upon associations between causal relations and ultimately selecting a course of action that meets the company's objectives but again, this depends on being in the network. In NTC, these are social networks built on relationships, and it is the nature of these relationships that determine what knowledge is stored and indeed what knowledge is forgotten.

"Relationships are very important in Japan. If there is no relationship then an NTC engineer would not even look at proposal from someone he does not know. I know John. [The author] *If he sends me an email I will read it. People here are very busy. They are always busy. It is important to build relationships."* NTC Japanese General Manager

"The Japanese are shy. They are reluctant to hear from a guy they do not know. They are suspicious of strangers. They will not listen until they know someone. Sometimes it is said NTC engineers are too busy to reply but even when they are not busy they are reluctant to reply to people they do not know." NTCE Japanese Director

Gudykunst and Kim (1997) write

> "Reducing anxiety is one of the major functions of communication when we interact with strangers because it can lead to more accurate predications and expectations about a stranger's meaning and behaviour."(Gudykunst and Kim, 1997:27)

One of the major aims of Global Executive Training is to create a more cosmopolitan management team which will influence the way the company manages knowledge. For Merton (1957), cosmopolitanism is an attitudinal stance or mindset that indicates

an orientation towards the outside world, Thich (1991) believes it is being attuned to another's assumptions, emotions and cognitions whist Ting-Toomey (1999) reasons it is being open to novelty and unfamiliar behaviour. Ultimately, a more cosmopolitan management team will challenge and perhaps even change organisational values.

5.9 Toyota

Toyota is relevant to this story not only because it is the world's second largest automotive manufacturer and by far the largest of the Japanese manufacturers producing more than 60 million cars per year, which is equivalent to twelve cars every six seconds (Toyota Motor Co., 2005) but because it has a different approach to knowledge management. Toyota is said to produce the most reliable cars in the world and regularly scores highly in J. D. Powers Reliability Surveys. It has recently overtaken Ford in global production terms and is set to pass Chrysler in sales to become one of America's Big Three. The secret of Toyota's success according to Miller (2004) is in meticulous organisation and obsessive vigilance, enshrined in the Toyota Production System (TPS) which is built on a philosophy of standardisation and continuous improvement (kaizen). Taicichi Ohno who developed TPS said, "Where there is no standard there can be no kaizen (improvement). When the fastest, safest, best quality, repeatable steps have been identified that is documented as standard. That is now the record to beat" (cited in Miller, 2004).

The Economist (January, 2005) argues that Toyota's success starts with:

> "its brilliant production engineers, which puts quality control in the hands of the line workers who have the power to stop the line or summon help the moment something goes wrong. Walk into a Toyota factory in Japan or America, Derby in Britain or Valenciennes in France and you will see the same visual displays telling you everything that is going on. You will also hear the same jingles at the various work stations telling you a model is being changed, an operation has been completed or a brief halt being called."

The author asked a Japanese colleague who used to work for Toyota, in the Interior Design Department how Nissan's working practices compare to that of Toyota and in particular how design reviews were managed.

"Not so much difference. If anything, I think Nissan probably has better processes but the processes in Toyota are very tightly controlled. In Toyota, the drawing is created by Toyota and is sent to the supplier. Nissan send the Spec. Tender to the supplier. The engineers in Toyota have the engineering skill to produce the drawings. In Toyota, for instance in the Interior Design division, the top manager of the division always comes from that division. In Nissan the top manager comes from another division and very often will not know the technology. In a Design Review (in Toyota), when senior managers involved in the Design Review see the drawings they know the part (they can easily imagine the detail (including 3D detail) from the 2D drawings

In Nissan, the centre of engineering lies with the Senior Engineer, a Design Review is held in effect between the Senior and engineers- it is daily routine work, nothing special. Design Review at a higher level cannot be held because of a lack of the specialized technical knowledge among the managers. In Toyota there is job rotation among staff who are ascending to manager level, but this is within similar sections / departments, and they return eventually to work in the same section department. In Toyota, after 10 years an engineer leaves drawing making. Management training is also done in-house." NTCE Japanese Senior

Nissan used to make its own drawings but this ended in the mid eighties when, as part of manpower reduction activity, drawings were outsourced to suppliers. Nissan defines the specification and issues a Specification Tender to the Supplier to action the work.

Toyota does outsource design work but when they do so the supplier's engineers are relocated to Toyota and act as "Toyota engineers."

"There is a close relationship with outsourcers: they work within Toyota. Toyota standards (TS) control the development, including CAD style / format- this is common

for all body suppliers. The Master Schedule controls the process. The project management functions from the body supplier for each model are also based at Toyota for the duration of the development. Between Toyota and its supplier base there is a single national culture and that culture is Japanese. There is trust. There is responsibility to each other and to the company and there are shared values." NTCE Japanese Senior

There is also disillusionment and frustration as explained by a NTCE Japanese Director.

"I was at University with some engineers who went to work for Toyota. Many years later we met. They were very frustrated. They felt controlled by the process. They could not change anything. One said he used to dream about being the engineer who designed the Nissan Skyline."

The author also spoke to a number of Nissan suppliers who also supply Toyota and Honda. They had no problem talking about their working relationships but said they preferred working with Nissan which they described as "gratifying." The Toyota equivalent of NTCE is called TMEM and is based in Brussels. It was described as being about the same size as NTCE but is expanding (one supplier thought to about 2000 people). They have some similarities to NTCE and do similar competitor benchmarking and vehicle evaluation but less testing. The main difference is their approach to design responsibility. Toyota Japan takes complete responsibility for the design and all changes have to be authorised by headquarters. There are local engineers but they are given little autonomy and this is very frustrating both for them and for the suppliers who want to make changes.

Engineers in Toyota Europe spend six month assignments in Japan where they learn the parts and then are given some responsibilities when they return to Europe. The ECR (engineering change request) - their equivalent of the design note - is always signed in Japan. The factories in the UK and France have no design staff and are more similar to NMUK than Barcelona. Purchasing is spread out; in the factories, in Brussels and in Japan. Honda has no equivalent to NTCE but they do have a small

design department attached to the factory at Swindon which is less than half the size of NTCE. Although they are smaller than Toyota they are given delegated authority for some very minor changes but all major design is done in Japan. Honda engineers in Europe sometimes undertake evaluation and benchmarking exercises locally but do not perform vehicle testing.

5.10 Conclusion

This chapter has developed the themes introduced in the previous chapter and examined how knowledge management and learning within global Nissan have been shaped by organisational culture and explained how the key Nissan research and development procedures and processes became "The Nissan Way." It has also debated and challenged some of the claims made in the literature and in recognising that procedures and processes are seen as "loose scripts" within Nissan gave the author a potential strategic focus for the study. He also identified specific cultural attributes in this chapter that may later be used to design the necessary frameworks to facilitate the interactions between partners and their models of learning. It has also shown how knowledge management and learning is crucial to Nissan's continuing success. In this chapter, the author has made the following as theoretical and practical contributions to knowledge.

5.10.1 Theoretical Contributions to Knowledge

- The GET model is instantly recognisable to the Japanese as an alternative to the University model, one which incorporates the important socialising aspects of Nissan's organisational culture and by extension the socialising elements of Japanese national culture, and preserves the mechanism by which social capital is developed within the company.

- Carlos Ghosn is only interested in the bottom line and this is key to understanding the dynamics of how knowledge is currently managed at Nissan.

- The reason Nissan has been able to quickly assimilate and adapt to a seemingly alien western management style is because behind the rhetoric

Nissan's organisational culture has always been elitist and this has had a direct effect on knowledge management and learning within the company.

- Procedures and processes in Nissan are seen as "loose scripts" and it is only through talking and working together that people learn the tacit as well as the explicit knowledge. Being excluded from these networks curtails learning.

- Loose scripts are a predetermined cultural control which emphasises the different ways power is reflected in procedures in Japan and the UK. Japanese procedures perpetuate a network of relationships where the power remains with the chief stakeholders whereas the British procedures have an authoritative function where the power is embodied within the issuing authority.

- Nissan's failure in the nineties was largely due to the unbending mindsets of the company elite.

- Nissan work practices have been compared with those of Toyota and it has shown that whereas Toyota tightly control and manage their process Nissan has relied on individuals or groups of individuals to deliver. Toyota's knowledge seems to be in the process, Nissan's knowledge is in its people.

- Nissan Japan's more open approach to recruitment is altering the Japanese approach to self promotion and self enhancement.

- NTCE British engineers want a procedure in order to understand and debate what is expected of them and they expect to be given all the information to do the job and understanding why is an important part of the process of learning. The view of Japanese management is somewhat different as they expect British employees to act within predetermined guidelines and do not understand why they should need to know about something that has been decided by the management on their behalf. They should trust that the company (working through the senior management) have taken everything into account before asking the engineers to do something.

- Nissan is shaped by individuals rather than by process; its knowledge is embedded in the social networks of Nissan Technical Centre Japan and central to these networks are technical and managerial experts.

- "Bottom up" management actually means hearing the voices of the selected few and even then, these voices are often, self censoring.

- Japanese management system of consensus is a theatre for the performing elite and dissenting voices are quickly squashed or marginalised. Involvement means to concur with the direction of the company elite.

- All nationalities have preferred communication styles and rely on body language to manage impressions, convey messages and emphasis meanings but these are not always easily understood cross culturally. Culturally mediated styles of communication limit understanding in global organisations.

5.10.2 Practical Contributions to Knowledge

It would be useful for researchers and practitioners to

- Understand the cultural expectations of organisational procedures and how they impact learning.

- Understand the effects of body language in a global setting.

The next Chapter opens Section Three of the thesis: Developing and implementing a strategy to Organise Around Knowledge.

Section Three: Developing and Implementing a Strategy to Organise Around Knowledge

Chapter Six

Putting a Face to Knowledge Management
at the
Nissan Technical Centre Europe

6.0 Introduction

The Chapter opens Section Three and traces the development and implementation of a strategy to organise around knowledge and comprises of Chapters Six, Seven and Eight and Nine. This Chapter opens the action oriented part of the study and begins to put a face to Knowledge Management at NTCE. It covers the period from January – December 2003 which was very much a time of wide ranging experimentation, reflection and learning as the author grappled to find practical applications for his work and his section. The study also begins to determine the scope and role of a knowledge manager and the meaning of knowledge management within global Nissan. Included in the forthcoming chapters are copies of actual presentation slides that were used to sell the idea of knowledge management to NTCE Directors and to colleagues in NTC.

SECTION TWO: Understanding the Impact of Organisational Culture **Chapter Four**: Organisational Culture and the Management of Change **Chapter Five**: The Impact of Organisational Culture on Knowledge Management and Learning at Nissan	**SECTION THREE:** Developing and implementing a Strategy to Organise Around Knowledge **Chapter Six: Putting a face to Knowledge Management at NTCE** **Chapter Seven:** The proposal to Organise Around Knowledge **Chapter Eight:** Pilot to Organise Around Knowledge **Chapter Nine:** Organise Around Knowledge Methodology

6.1   Making a Knowledge Management Strategy at NTCE

The author's main job at NTCE is in making and deploying knowledge management strategies. The premise for making a strategy is that the value of knowledge is in how a company uses that knowledge in its daily business. Knowledge management strategies and activities need to be aligned with the business strategy if they are to become a source of competitive advantage. In Nissan's case, Nissan Motors Limited

(NML) sets the direction and overall strategy (Figure 6.1). Nissan Technical Centre and Nissan Technical Centre Europe align their strategies with each other and with those of Nissan Motors Limited. The way these strategies are aligned moderates the relationship between knowledge, learning and performance (Vera and Crossan, 2003). This is a trade off; for instance, the opportunity for learning may be curtailed because the team cannot afford the time to debrief colleagues, despite the obvious advantages of transferring knowledge and identifying process improvements (Zollo and Winter, 2003).
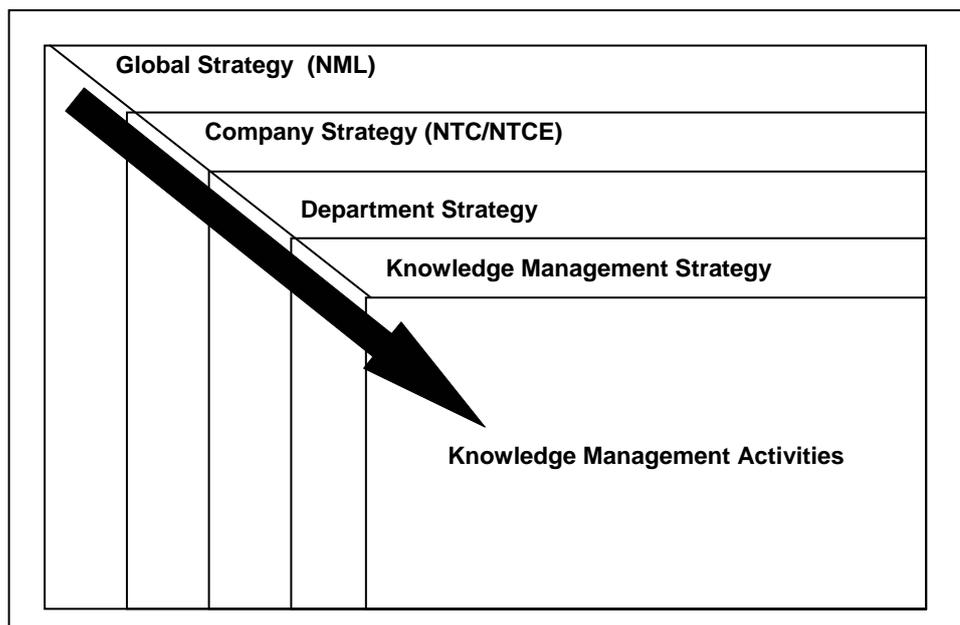
Figure 6.1: Aligning Strategies

The point of a knowledge-based strategy is to make money (Buckman, 2004) whereas Manville and Foote (1996) offer the following broader principles for building a knowledge based organisation:

1. Knowledge based strategies begin with strategy not knowledge
2. Knowledge based strategies need to be linked to traditional measures of performance
3. Executing a knowledge based strategy is not about managing knowledge it is about nurturing people with knowledge
4. Organisations leverage knowledge through networks of people who collaborate – not through networks of technology that interconnects

5. People based networks leverage knowledge through organisational "pull" rather than centralised information "push."

In making knowledge management strategy Seddon (2003) suggests that the key question should be: What role does knowledge serve in the decision making and performance improvement? He is dismissive of knowledge vendors who focus mainly on knowledge capture. Simply, using Garud's (1997) definition as a baseline, NTCE is in the business of knowing the how, why, what, who, where and when of vehicle design and development. The author argues NTCE's competitive advantage is to do things faster than our competition and so raise our value to the global organisation. This requires a knowledge management strategy to focus on:

- Increasing the speed at which we do things
- Guaranteeing the quality and accuracy of our work
- Maximising our human asset value by improving capability.

This was the justification put forward to NTCE Directors and the Knowledge Sharing Group at NTC at the beginning of 2003. After some debate it was accepted and the three maxims have become the pillars for the work of the Knowledge Management Section but it still did not explain what it was the section would deliver. NTCE Directors wanted something tangible, what would the section actually deliver? How would we contribute to the "bottom line?" NTC colleagues were faced with the same problem.

 "We have been talking about knowledge management for two years and still do not know what to do. Please help us. We have many new starters. Forty nine per cent of NTC staff have been with the company less than five years and forty two per cent less than three years. We need knowledge management. We must work together and share ideas." NTC Manager, Knowledge Sharing.

Knowledge management is a complex, multi layered subject and can be analysed at various levels involving socio cultural, organisational, behavioural and technical dimensions and resultant knowledge management strategies fall under three main

headings, behavioural (e.g. communities of practice), information (e.g. data mining) and technology (e.g. expert systems) based strategies. Table 6.1: Shows the Knowledge Management Projects being considered in January 2003. At this stage they were ideas for discussion or small pilot activities. They made sense; they were being debated by academics and written about in the literature. Company intelligence also suggested other organisations interested in knowledge management were working in similar areas. More importantly, links could be made to the business and company strategies but they were not yet fully aligned. They were projects waiting for internal sponsors, waiting for justification; waiting for a company buy in.

Knowledge Management Strategy		
Knowledge Management Activities		
B32A KNOWLEDGE CAPTURE & TRANSFER (6.2)	EXPERT FINDER (6.2.7)	ASSET REPOSITORIES (6.7)
KNOWLEDGE CIRCLES (6.6)	SOCIAL NETWORK ANALYSIS (6.2.5)	AUDIT KNOWLEDGE (6.9)
E-LEARNING (7.4)	PROJECT KNOWLEDGE CAPTURE (6.9.1.2)	DEVELOPMENT NTCE PORTAL (6.8)
GENERIC MASTER SCHEDULE (5.6.1)	DESIGN KEY PROCESSES (7.3)	JOINT DEVELOPMENT TEAMS (6.3)

Table 6.1: Knowledge Management Projects January 2003

(Note: The numbers in brackets refer to the section in the thesis where the activity is discussed).

6.2   B32A Knowledge Capture

The first activity to gain support was B32A knowledge capture. The company was about to send a small joint development team of fifteen design engineers to Japan for twelve months to work at NTC on a new model code named, B32A. This was not the first time the company had undertaken such an activity but it was the first time that it was concerned with knowledge capture. Previous knowledge had been lost, people had returned from Japan and had either left the company or since been moved to other

sections or departments within NTCE without codifying or articulating their experience. With this in mind, the author designed a knowledge capture pack. This was not an attempt capture all the knowledge of the B32A joint development team but to provide a framework for a wider company initiative to provoke discussion and learning and was divided into seven parts:

1. Job Outline
2. Planning Schedule
3. Flow Chart
4. Learning Points
5. Social Network Maps
6. Supporting Information
7. Personal Profile

6.2.1 Job Outline

The joint development team engineers were asked to write a summary of their time of working in NTC. They were asked to consider their areas of responsibility and report on what went well, what did not go well and the problems they faced. These summaries were used as the basis for one to one interviews the author held with the team members on their return to NTCE. The interviews were recorded and transcribed.

Extract from interview with Platform Liaison Engineer 20/03/03.

"My main job was Platform Liaison for the suspension area. I probably spent 80% of time working on suspension related issues. Within that I was liaising with upper body people and other platform areas. I represented the Suspension Department at Planning Centres, fielding questions and taking back requests about vehicle planning for example, vehicle posture because it affects all body groups. They need sight lines and the H point. They need reference points to tell them where the ground is in relation to wheel centres. These things change as the programme progresses because we get new information. Weight changes and commonality issues may all compromise ground clearance......."

6.2.2   Planning Schedule

The engineer was asked to take key events from the master schedule and create a plan recording the sequence of events. This was the beginning a cross functional map which shows how the organisation's major work processes cut across several functions (Figure: 6.2).
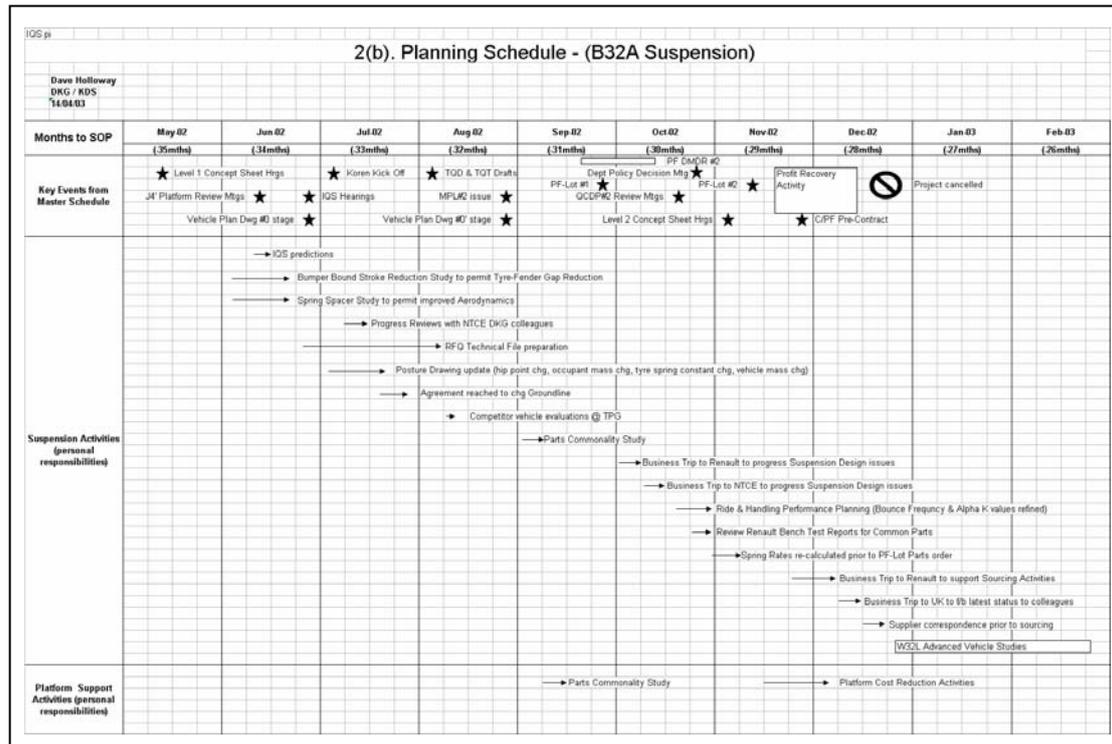
Figure: 6.2 Planning Schedule – B32A Suspension

6.2.3 Flow Chart

The engineer was also asked to make a flow chart (Figure 6.2.1) and to highlight what resources were needed to do the job (reference material, CAD files, NEMS, Drawings etc.). Flowcharts are perhaps the best-known tool for illustrating work processes. They have been used for a long time in industry to define the job or to develop procedures for accomplishing a specific job responsibility.
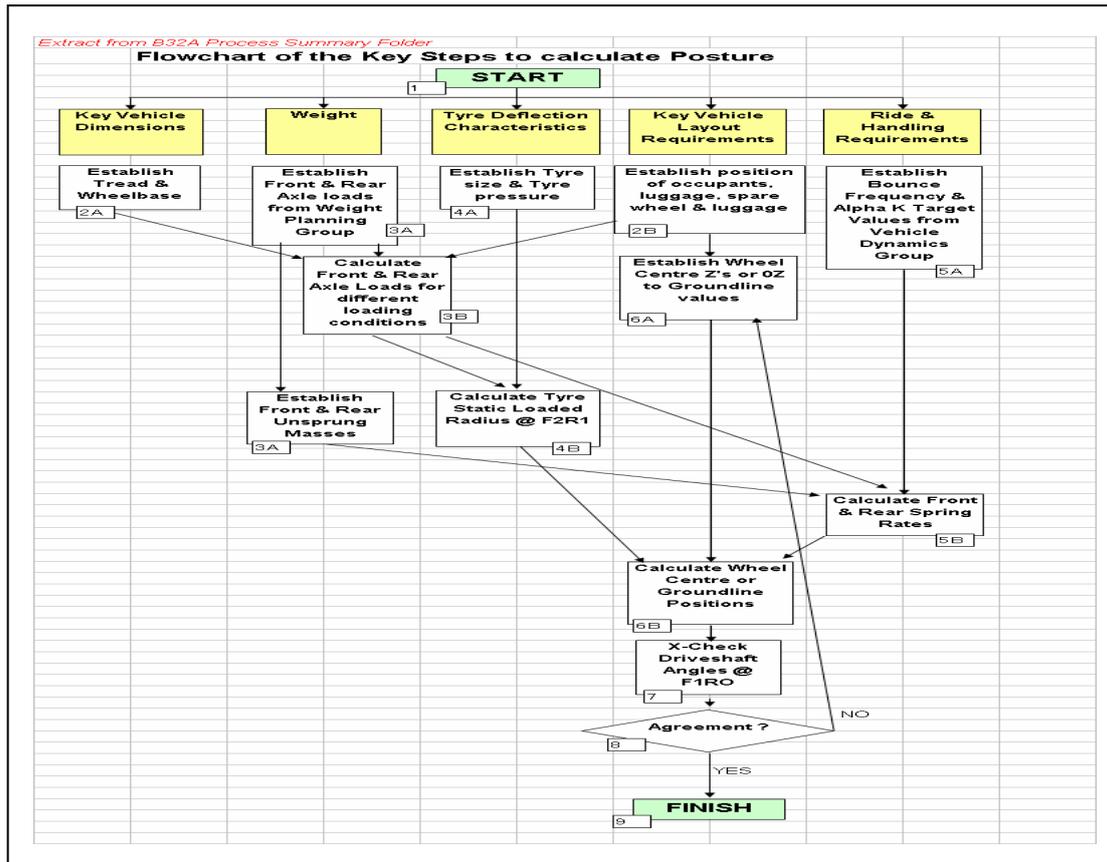
Figure 6.3: Flowchart to Calculate Posture.

6.2.4   Learning Points

Key learning points were recorded and bullet points outlining their significance were captured on preformatted tables (Table 6.1.2). It was accepted that the language used would be that of experts and specific to learning domains (i.e. Suspension). The learning points were meant as prompts for discussion and it was expected that anyone using the charts would have a fundamental understanding of Nissan design and development standards.

4(b). Learning Points - Suspension			
Dave Holloway DKG (KDS) 15/04/2003			Sheet 1 of 1
Number	**Item**	**Key Point**	**Reason**
1	Posture Setting	Defining Wheel Centre & Groundline positions relative to 0Z	Fundamental to the stance of the vehicle
2	Component knowledge	Understanding how Ride & Handling requirements are translated into component specifications	Fundamental to have a feel for supension design
3	Layout considerations	Understanding Renault & Nissan layout philosophies	Acceptance of Renault parts and specs

Table 6.2: Extract Learning Points Suspension

Explanation of item 1: Posture setting refers to the way the vehicle is positioned relative to the ground and key to this is defining the wheel centres at the design stage.
Explanation of item 2: To ensure the engineer understands suspension design he or she needs have an in depth knowledge of the design and function of the components which make up the ride and handling system.
Explanation of item 3: Engineers need to be aware of the differences between Renault and Nissan layout and parts specification to maximise opportunities for parts rationalisation.

6.2.5   Social Networks

Taking on board the comments of previous joint development team engineers, who said it took them at least six months to establish the necessary networks to allow them him to function in their roles at NTC, the B32A team were asked to record who they spoke to and why, and who spoke to them, and the reason for the communication. Social networks are essential for the transmission and creation of knowledge (Van Wijk et al., 2003). The aim was not only to map social networks of the joint development team but also the reason for the interaction in order to classify that knowledge into the know-what, know-how, know-when, know-where, know-who, and know-why components (Garud, 1997) of vehicle design and development (See Table 6.3).

Knowledge Capture: B32A Social Network/Map		Interviewee: Dave Holloway		Section: DKG (formerly KDS)
		Date: 24/3/03		Resp: Platform Liaison
Who do you talk to?	**Section**	**How often?**		**About what?**
Y.Kato		Every week		General Suspension development issues
A.Tanaka		Every day		B32A Suspension design issues
H.Nishigaki		Every day		B32A Front Suspension design issues
N.Terashita		Every day		B32A Front Suspension design issues
T.Okunishi		Every day		B32A Rear Suspension design issues
Kawamata		Every 2 days		B32A Front Suspension design issues
R. Ikeuchi		Every week		B32A Front Suspension design issues
T.Zen		Every 2 months		W32L Rear Suspension issues
Kuroda		Every week		B32A Front Suspension design issues
J.Ichiba		Every month		General Rear Suspension issues

Table 6.3: Extract Social Network Platform Engineer

6.2.6 Supporting Information

The engineers were asked to list key information and the source of the information that they needed to do their job. Cross and Prusak (2003) report that many organisations find it difficult to access available information and knowledge, these inefficiencies are due the incompleteness of information, the asymmetry of knowledge and the localness of knowledge. Incompleteness of information is described as when a firm does not know where to find their own knowledge. Asymmetry of knowledge is where; in one department there is abundant subject knowledge that would be useful to other departments had they known about it or had access to it. Localness of knowledge is a knowledge of the market actors (Who has the power? Who makes decisions?), knowledge of the market price systems and knowledge of the market signals (Table 6.4)

Item	Content	Location
KD1-26111	Nissan Engineering Manuel: Front Lamps	NTC Standards Support database
KD1-26001	Nissan Engineering Manual: Lamp Calendar	NTC Standards Support database
26010 NDS00	Nissan Design Standard: Headlamps	NTC Standards Support database
ECE 1&2	Headlamps	NTC Homologation Group shared drive
ECE 8	Halogen Headlamps	NTC Homologation Group shared drive

Table 6.4: Extract Table of Supporting Information Headlamp

6.2.7 Personal Profile (Expert Finder)

The final request was that the engineers completed a personal profile (Figure 6.4), Only the area in grey of the Table was mandatory. People and organisations acquire information through social networks, and a portion of this information becomes knowledge. Whereas, Nelson and Winter (1982) propose that the knowledge of any firm lies primarily in its routines, Cross and Prusak (2003) believe it also lies in a dynamic web of relationships that underpin the organisation and that it does not simply flow through the organisation but is bartered, blocked, exchanged, and modified by the people who hold the knowledge. The author proposed to make the profile available on the company intranet and put people in touch with each other by first breaking down barriers of recognition (Figure 6.4).

Photo	Ext. Tel. No:.	01234 755642
	Int. Tel. No.:	5642
	Fax:	01234 755799
	E-mail:	Dave.Holloway@ntc-europe.co.uk
	Department:	DK0
	Group:	Chassis Design
	Section:	DKG
	Sub Section:	DG5
	Location:	!st Floor North, Cranfield
	Line Manager:	Terry Owen

Current Job Role:	Responsibilities:
Mar 03: DKG PNCAP (Handling) Co-ordinator ; DKG Ride & Handling Performance Planning Co-ordinator	R & H co-ordination for new models. PNCAP (Handling) strategy
Previous Nissan Experience:	Skills:
June 02 > Feb 03: STA in Japan (B32A Platform liaison) June 99 > May 02: Senior Engineer , Suspension Design & Test June 98 >May 99: Senior Engineer, Drivetrain Design & Test Jan 93 > May 98: Engineer, Drivetrain Design & Test Sept 90 > Dec 92: Graduate Engineer, Chassis Design	Project Management skills Man Management & Interpersonal skills Suspension & Drivetrain Design & Test knowledge
Other Relevant Experience:	Hobbies & Interests:
Sept 86 > June 90 Loughborough University; B.Tech (Hons) Automotive Engineering & Design	Member of Lotus Cars Owners Club Scuba Diving Cookery Music & Films

Last Update: 4/3/2003

Figure 6.4: Example of Personal Profile

The tool could also be used to put people in touch with experts but at the time of writing there was no definition or agreement as to what was meant by expert. This problem was not unique to NTCE as one NTC General Manager explained.

"Who is the expert? It is very difficult to decide. Before this job I worked for many years in the engine department I would say I was an expert in this area but maybe people who work there now there would not agree. We have had many discussions in NTC about this. Some people say he is an expert but others do not agree." NTC General Manager

6.3 Joint Development Teams

Joint development engineers said that working in NTC was "tough" and much was expected of them in terms of commitment and performance. They described it as a high pressure work environment where the pace of work was frantic. They were expected to work long hours and had to balance cost and quality targets, shortened delivery times and learn how to use new systems, tools and processes. The onus was on them to deliver and there was no formal knowledge capture or sharing. (Figure 6.5).

A previous Joint Development Team Engineer explained:

"I felt I was thrown in at the deep end. I didn't know what it was I was supposed to be doing or who to ask. I didn't even know what questions it was I was supposed to be asking and I was overloaded with information. I didn't know what to do with it. It was a night mare!"
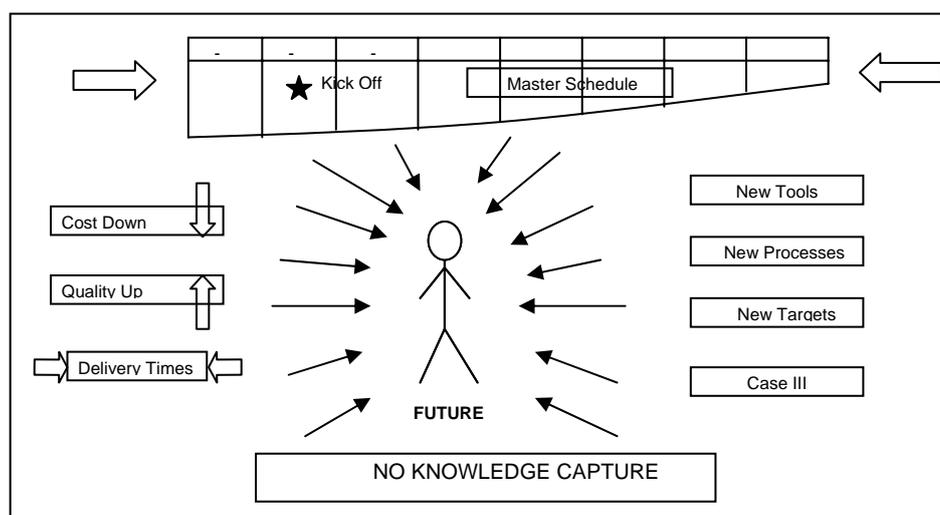
Figure 6.5: Pressures on the Joint Development Team Engineer

The complaint of information overload is commonly heard in business but Nonaka (1994) makes the point that information is not the same as knowledge

> "information" and "knowledge" are used interchangeably, there is a clear distinction between information and knowledge … information is a flow of messages, while knowledge is created and organised by the very flow of information, anchored on the commitment and beliefs of its holder." (Nonaka, 1994:15)

Other writers have made similar distinctions. Armbrecht et al. (2001:21) define knowledge as "that which is within and between the minds of individuals, and is tacitly possessed" whereas information, according to Davenport and Prusak (1998), is knowledge that makes a difference. Craig (2000) makes another distinction, he argues that although information is a source of knowledge, it is outside of our control and adds other sources of information are observation, experience and feelings. The first step in managing knowledge and making the necessary strategies is to understand and manage the information on which to build knowledge and this is the basis for the author's knowledge management strategy.

6.4   The Formation of the Strategy

The author's framework for a NTCE Knowledge Management Strategy includes categories for knowledge creation, knowledge storage and retrieval, knowledge transfer and one for audit and is shown in Table 6.5. The following sections describe the formation and the philosophies underpinning the strategy. The author believes the key to organisational learning and knowledge capture within Nissan are the master schedules (Chapter 5: 110). These schedules are the gateways or framework to help the company mine for the information it needs. The author's proposed strategy was to build around the master schedules, capturing the processes and the knowledge and thereby creating the necessary human and non human infrastructures to retain and build on the knowledge base. The master schedule shows how the major functions of the business interact with one another in the form of processes. It allows boundaries to be drawn around what needs to be done, when and in what order and also what needs

to be known at that point in time. Being able to access information quickly is an essential skill in any business.

Drucker (1999) argues that management of knowledge has to encompass and improve business processes. These processes can be codified and articulated as business practices or they can be the less understood processes of how human beings relate to each other in organisations. From a social constructivist point of view, these processes are conduits of business practice and traditions. Continually reflecting on process is the way we generate meaning together. The organisation must continually reconstruct their nature in order to keep them alive and remain sensible in the face of rapid global change. Tiwana (2002) differentiates between internal and external organisational memory. Internal memory is the knowledge held by individuals or groups of individuals within an organisation and includes organisational culture. External memory is explicit, codified knowledge found in organisational policies, procedures, manuals and computer files. Walsh and Ungeson's (1991) model of organisational memory also deals with non-human repositories such as systems, structures, rules, and routines. Whereas, Schein (1998) focuses on human beings as repositories for knowledge and Nonaka and Takeuchi (1995) look at the role individuals play in converting tacit to explicit knowledge in creating organisational knowledge.

Knowledge: The how, why, what, who, where and when of vehicle design and Development				
Knowledge Audit	**Knowledge Creation**	**Knowledge storage and retrieval**	**Knowledge Transfer**	**Knowledge Application**
An assessment of what knowledge is needed, available, missing, applied and contained within the company	The development of 'new knowledge'. At the individual level, knowledge is created through cognitive processes such as reflection and learning. Social Systems generate knowledge through collaborative interactions and joint problem solving.	The development of organisational memory (i.e. stocks of organisational knowledge) and the means for accessing its content.	The transmission of knowledge from the initial location to where it is needed and applied.	The use of knowledge for decision making and problem solving by individuals and groups in organisations.

The diagram area contains the following labelled boxes and flows:

Knowledge Audit column: DMDR's; Concept sheets; Key Process Audits; E11A; W32L; Technical Audits; JDT Audits; Supplier Relationship Audits; Archive Audit; Knowledge capture Monthly Reports- individual Learning points; Benchmarking Henley KM forum KM pro SNA E- learning

Knowledge Creation column: People to Processes; Identification of Processes to be reviewed; Development of key processes; Knowledge Circles; Supplier Networks; Reviewed for Generic content; Development of timing schedule; Development of technical schedule

Knowledge storage and retrieval column: Procedure Developed; Development procedures portal page; System/ Part Reviewed; KC Homepages, Project Pages, Department Pages.; Added to Generic Schedules; Generic Technical Schedule

Knowledge Transfer column: Add to Training Requirements and New starter Pack etc.; Planning checklist Recurrence prevention; Knowledge Circles; Supplier Networks

Knowledge Application column: Issue/ Implement

		-key circle workshop	- Knowledge Circle Homepage	- Knowledge Circle Workshops	
People to People	- Learning History - Capture of knowledge from e-mails	- supplier expertise -Teamroom Discussions - Recurrence prevention Seminars - Key process teams - Developing technical expertise	- Department Homepage - Com timing schedule -Generic Technical Schedule	- Teamroom discussions -Recurrence prevention Seminars - New starter introductions - Skills matrices - Objectives	- On-the-job Training
People to Tools	**Description of IT requirement**	- E-learning systems- computerised systems in which the learner interacts with the learning material - Collaboration Support Systems-	- Data Warehouses- centralised repositories - Data mining capability- looking for patterns/anomalies etc.	- Communication support systems for the exchange of messages - Transmitting codified info between, repositories and individuals	- Expert systems- rule based systems & case based systems. - Decision support systems.
	Existing NTCE Software	- CAD systems- IDEAS, Alpha TDM, Links, Space vision, data, Visual Basic. etc - Operating Systems- windows, servers	- Bespoke Systems- ANEMS, NEBS, D-NET etc. - Database- MS access	- Concern Management Tools- NTI, CUS, DPRS, ETPR Supplier Management systems- NETS	- Test, DCS, CADICS-M - Company intranet Finance- TIMES etc
	External Software		- Goldfire	- e-RM	
	Equipment	- Videoconferencing, electronic whiteboard			
Knowledge Conversion		Externalisation- Tacit to Tacit	Combination- Explicit to Explicit	Combination- Explicit to Explicit	Internalisation- Explicit to tacit
		Socialisation- Tacit to Tacit			

Table 6.5: The Knowledge Strategy Framework

The proposed strategy is shown pictorially in Figure 6.6 with feedback loops into the next project and will be discussed under three headings:

- People to Process
- People to People
- People to Tools
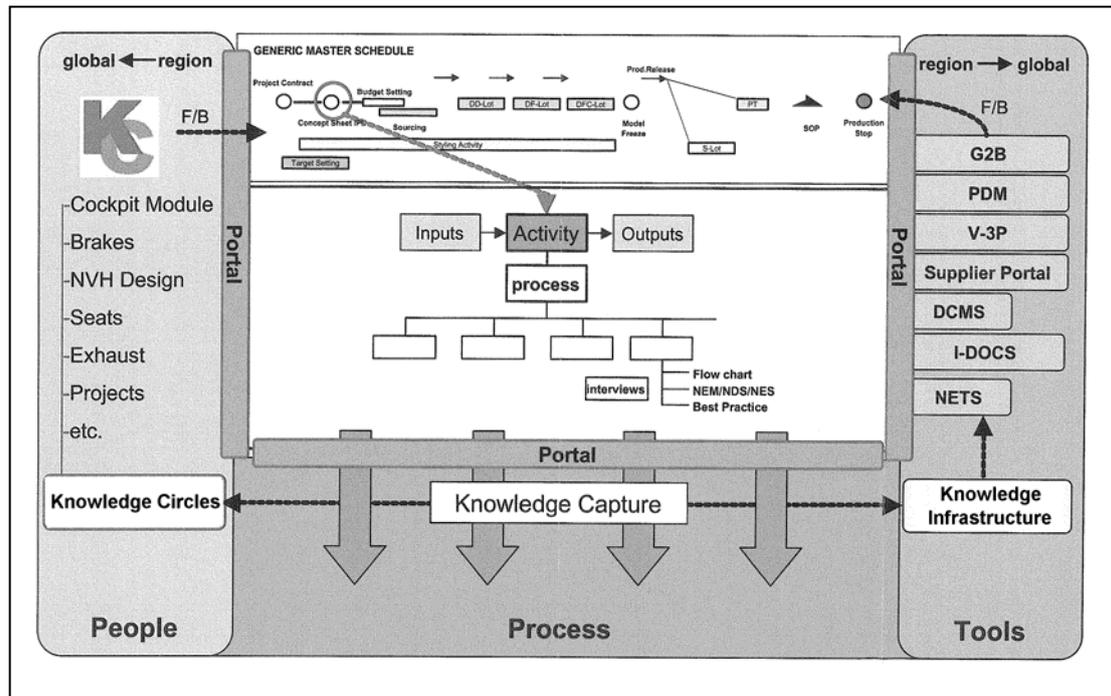
Figure 6.6: The Strategy Formation

6.5   People to Process

Nissan, as already explained builds its business around processes. NTC are responsible for global technical processes, and the latest being developed under the banner of V3P, (Value Up for People, Process and Tools) are about improving company efficiency and effectiveness and comprise of the following:

- Digital Build: A virtual build based on CAD data.
- Physical Build: A build with actual parts
- Global Bill of Materials (G2B): A list of parts needed to build vehicles
- Product Data Management (PDM): A system to manage CAD data.
- Computer Aided Engineering (CAE)/Computer Aided Design (CAD) Tools: Computerised systems to aid design.

The responsibility for understanding the development of these tools lies with other NTCE managers. The author will return to the subject of V3P in Chapter 6: 154, when he explains his proposal, from a Knowledge Management perspective, for the strategic implementation of the tools to raise the capability of the company. To understand the key design and development processes used by engineers the author held a small workshop and made an interrelationship map. An inter-relationship map shows the big picture of how the major functions or business processes interact with one another (Figure 6.7). The number of feedback loops emphasise the importance of the key processes and were identified as:

- Nissan standards
- Planning drawing
- Design reviews (including DMDR – Digital Mock Up Design Reviews)

These have already been introduced in Chapter Five and central to the whole process is the Planning Drawing. The author developed a model and proposed a systematic knowledge capture and learning tool for a Planning Drawing Design Contextual Map Figure 6.8) which are explained in the next section

Figure 6.7: Design and Development Interrelationship Map

6.5.1   Planning Drawing Design Contextual Maps

The model was built on the premise that the planning drawing was a process with a series of inputs and outputs. The word "context" is key because the information and knowledge is in the context of today's design. It is a customer–centred model, optimising work processes and managing the interpersonal dimension of design and development in a cross functional team by clearly stating objectives and deliverables and in the process, discovering design implications. Contextual Design externalise good design practice for a team (Beyer and Holtzblatt, 1988). On average a Planning Drawing has in excess of forty input groups, ranging from manufacturing requirements to media reports and often the inputs and outputs of a planning drawing are interrelated. Each input group comprises of numerous other inputs. The author proposed to make a tool which was a "one stop shop" for the inputs and outputs and also to store the technical justification needed to understand the job (Table 6.6)   It is a tool for capturing the "Know Why" of design and supplements the V3P CAD "Know How" as being developed by the Nissan Technical Centre, Japan (Chapter 1: 8). The technical justification was captured by asking and codifying the answers to the "5 Whys," a technique used by Nissan engineers in their daily business to deepen their understanding of any particular problem..

Following are examples of showing how the tool was populated by members from the vehicle safety section for their planning drawing for a passenger airbag.
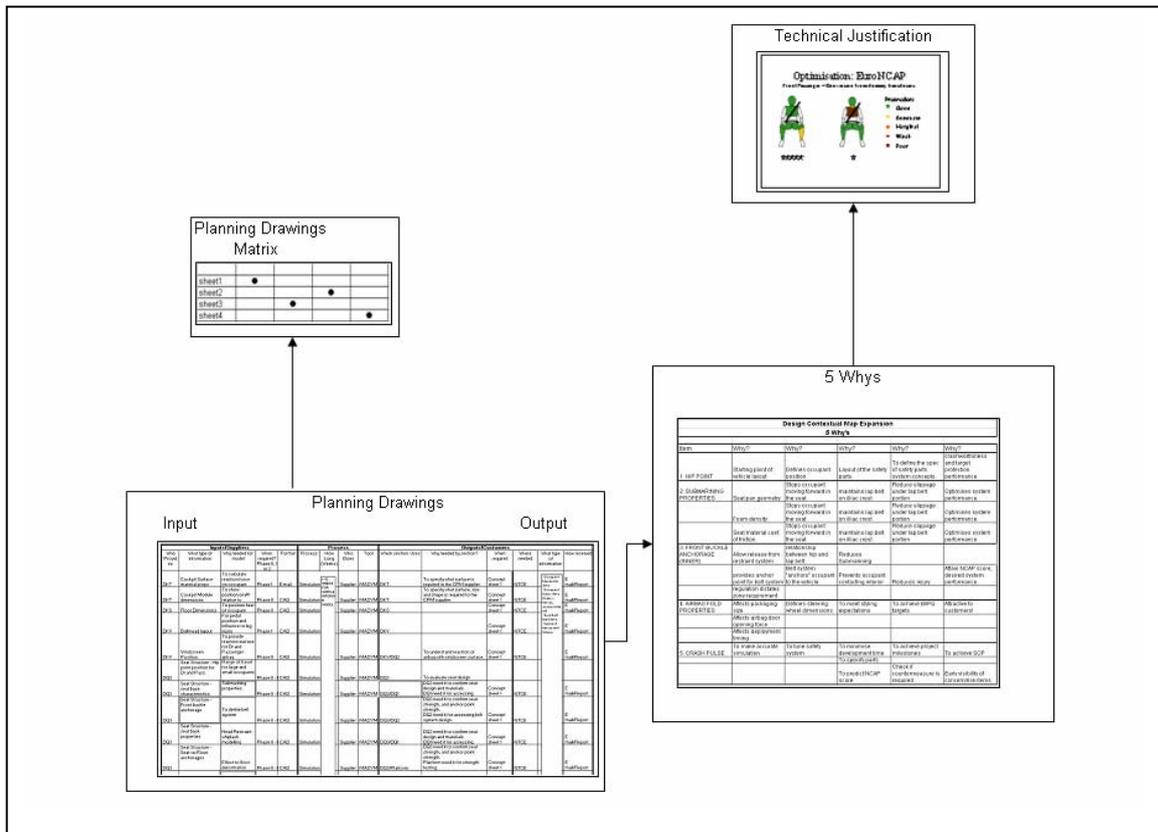
Figure 6.8: The Basic Concept of a Planning Drawing Design Contextual Map

6.5.2 Input/ Output Model

This entry shows an input to Planning Drawing for the Passenger Airbag from the trim section (DKT). Vehicle safety needs to understand the material of the cockpit module as part of their calculation for the reaction forces on the occupant. It shows when the information is required and the expected format for that information.

					Process			
Who Provides?	What type of information?	Why needed?	When required? (Phase 0, 1 or 2)	Format	Process	How Long (weeks)	Who Does	Tool
DKT (Trim Section)	Cockpit Surface Material Properties	To calculate reaction force on occupant	Phase 1	Email	Simulation		Supplier	MADYMO

Outputs/Customers					
Which section uses?	Why needed by section?	When required	Where needed	What type of information?	How received?
DKT (Trim Section)	To inform the CPM supplier what surface is required	Concept Sheet 1	NTCE		Email/Report

Table 6.6: Input Output Model

6.5.3 Planning Drawing Matrix

 The matrix shows other NTCE sections and the names of the seniors of those sections who are impacted by the Planning Drawing for the Passenger Airbag. The tool would be so designed that these seniors would be notified of any change to the Planning Drawing for the Passenger Airbag that might affect their work. Problems arise when changes to Planning Drawings are not communicated between sections.

Planning Drawing Name	**Section/Senior Engineer**		
Passenger Airbag	**DA6**	**DR5**	**DR6**
	J. Jones	**A. Abe**	**S. Wall**

6.5.4 Technical Justification: The 5 Whys?

Phase Two is the methodology to unearth the "Design Whys" Encouraging the engineer to question the importance of the information he needs and justifying his design in technical terms. The line example below shows why the Hip Reference Point is important in occupant protection. Each question opens up to a deeper level and understanding of knowledge.

Item	Why?	Why?	Why?	Why?	Why?
1. HIP POINT	Starting point of vehicle layout	Defines occupant position.	Layout of the safety parts.	To define the spec of safety parts system concepts.	Optimised crashworthiness and target protection performance.

Table 6.7: The 5 Why Technical Justification for the Hip Point

6.5.5 Technical Data Supporting the Justification

The 5 Whys are linked to technical data which supports the justification. In this instance it shows how the restraint system has been optimised to meet its performance target.

6.5.6 The Planning Drawing Design Contextual Map as a Learning Tool

The author proposed that the Design Contextual Mapping tool was owned and continually updated by the Subject Matter Expert who was to use it as a learning tool for both him and herself and also in   discussions with engineers. It was built using Kolb and Fry's (1975) work on Learning Circles,

- Observation and Reflection
- Forming Abstract Thought
- Test in New Conditions
- Concrete Experience.

Kolb and Fry (1975) argue that the learning circle can begin at any one of the four points and that it should be approached as a continuous spiral (See Figure 6.9).
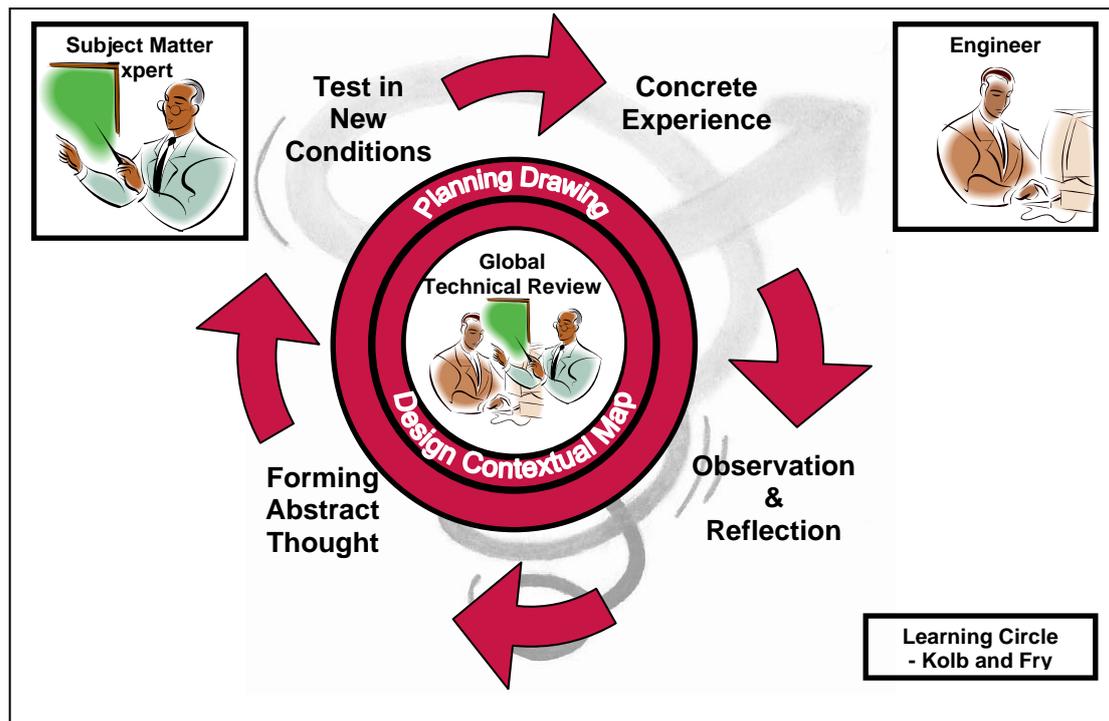
Figure 6.9: Using the Planning Drawing Design Contextual Maps as a Learning Tool.

6.6   People to People

The second part of the strategy was the creation of Knowledge Circles Designed to put people in touch with each other. Knowledge Circle was the name the author chose to re-brand and launch communities of practice at NTCE. It was another instance of having to use the language games of the company to sell the idea of knowledge management and promote change. The author had used the term "communities of practice" with colleagues in some early discussions and it was met with blank expressions. It was not easily recognisable and in danger of being dismissed as "more theoretical mumbo jumbo" so rather than instantly de-railing the initiative the author decided to capitalise on Nissan's use of "Quality Circles" and promote the business of creating and sharing knowledge through Knowledge Circles. He also stressed that other auto makers already had communities: FIAT emphasises learning through communities; Daimler Chrysler has Tech Clubs and Renault have Club Metiers in operation at all of their manufacturing plants. The author used "benchmarks" knowing that in the past, the Directors had used similar tactics to justify their own arguments. Drew (1996) rates bench-marking as a core knowledge management activity in

enhancing organisational efficiency equal in importance to processes for knowledge capture, creation and distribution.

The argument the author used when making his proposal for Knowledge Circles, or Communities of Practice to NTCE Directors was that where there is practice there is always community. Communities consider new ways of meeting their objectives by building on what is known and can be viewed as learning how to learn organisationally. Communities of Practice deal with critical work issues, have clear project deliverables, and comprise of people who learn on the job (Brown and Duguid, 1991). The premise was that Knowledge Circles would connect people, they would be cross functional, provide a forum for discussion and learning, enhance capability, improve performance and lead to creativity and product innovation. The framework for the circle was the previously mentioned Generic Master Schedule and Knowledge Capture Pack.
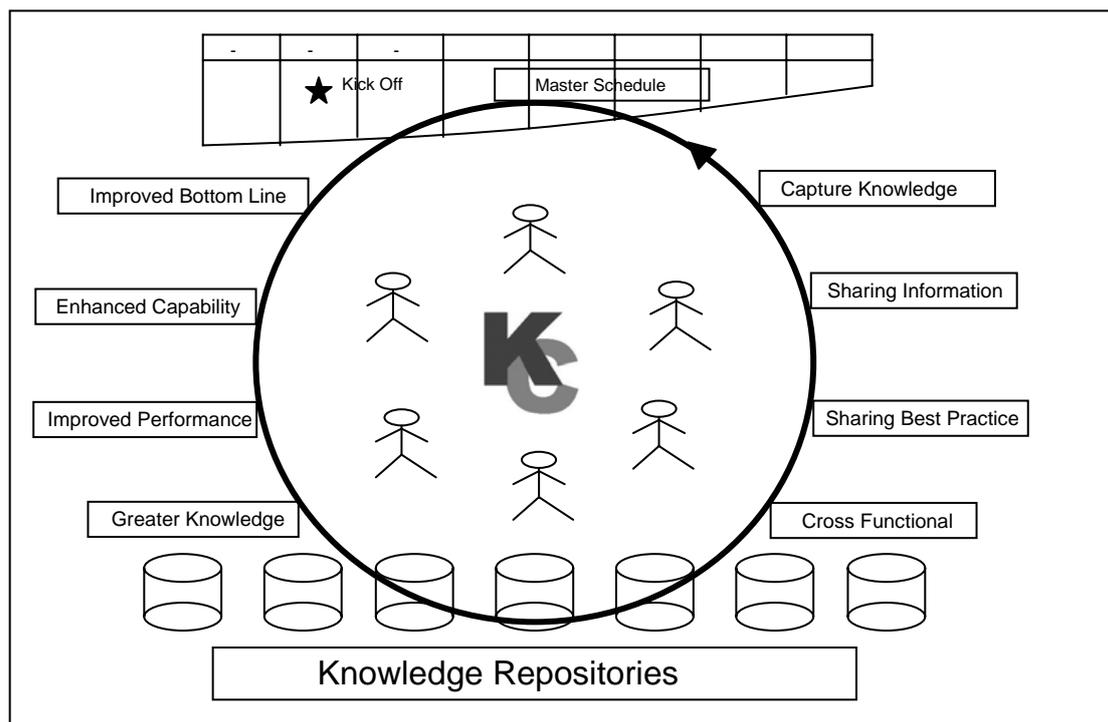
Figure 6.10: The Knowledge Circle

There was another, perhaps more contentious side to this argument that was not discussed at the Directors Meeting. For the organisation to learn and be innovative it needs to fuse existing and new knowledge (Kogut and Zander, 1992). The author has

already explained the importance the Japanese place on social networks and relationships and he has written about the underground NEMs and explained that if NTCE is to learn from NTC it needs to be part of these networks. The author's intent was to get the company to accept Knowledge Circles as a learning tool and thus ease the way for engineers to enter discussions with each other. Vygotsky (1978) and Leontiev (1978) formulated the theories relating to higher mental functions which gave rise to the social and constructive nature of knowledge. Learning is situated and contextual (Brown et al., 1989), knowledge is about learning on the job and is a coordinated and shared understanding between people. Knowledge is socially constructed through collaborative efforts or by debating different and sometimes opposing perspectives. Knowledge cannot be passed like an object or divided into physical pieces rather it is created by individuals through cognitive processes such as reflection and learning, or in groups, through collaboration and joint problem solving (Alavi, 2000).

Nonaka and Konno (1998) used the concept of 'ba' to explain how knowledge is created in organisations. Knowledge Circles were intended to be frameworks for 'ba,' which is described as a shared space for emerging relationships where the knowledge of either the individual or collective is enhanced. Nonaka and Konno (1998) further describe this space as being originating *ba*, interacting *ba*, cyber *ba* or exercising *ba*. Originating *ba*, is where people share feelings, emotions and experiences and tacit knowledge is made explicit. Interacting *ba,* is where people integrate the way they think through discussion and use a common language to describe their ideas which facilitates the translation of tacit into explicit knowledge. Cyber *ba* is where people exchange and disseminate their ideas with others facilitating the synthesis of explicit knowledge across the organisation. Exercising *ba,* is where people learn by continuously reflecting on the shared language and ideas, facilitating the conversion of explicit into the organisation's tacit knowledge.

The Generic Master Schedules and Knowledge Capture Packs focus on individual and explicit knowledge and posits that knowledge is easily represented through symbols (Nonaka and Takeuchi, 1995) and can be delivered as bespoke packages.
At this level, learning is considered an explicit, conscious process resulting in a change in either knowledge or behaviour but organisational learning is often a subtle

change of meaning. Knowledge is "what we know" whereas meaning involves the interpretation of knowledge, "what it means to us" and involves construing relationships between or among given pieces of knowledge and other pieces of knowledge. Semantic Organisational Learning relates to meaning, not only of words but also of symbols and actions and involves a change in how the community understands itself. It is not necessary for this change to be articulated because learning and meaning often exists in the collective interactions of the community. Semantic learning is the collectively shared sense of what specific knowledge means to the community. This learning is so subtle that it is not even labelled as such until retrospective sense making occurs or until external feedback raises their awareness of the change. Once it is brought to the collective's attention, it can officially be labelled "learning" by those involved (Corley and Gioia, 2003) and become explicit in their actions and future meaning-making efforts.

The author was also aware that learning is sometimes compromised by perceptions of individual and organisational identities and challenging these identities can be threatening because often, our self perception is different to how others see us (Corley et al, 2000). Weick and Ashford (2001: 711) suggest that "individuals learning about their own performance or that of their organization often make trade-offs between the desire for accurate information and the desire to defend the ego." The premise is that in building relationships these identities are enhanced rather than threatened and that learning is facilitated within the Knowledge Circle. Knowledge Circles are about primarily about learning and are different to teams although the author accepts there is a great deal of learning within teamwork. The author makes the distinction between Knowledge Circles and teams because Nissan provides itself on teamwork and often learning is not part of the team agenda. Knowledge Circes are driven by values whereas teams are driven by deliverables (Nickols, 2000). Table 6.8 summarises the key differences.

Knowledge Circles/Communities of Practice	Teams
Driven by Value: • Shared interest or practice • Value discovered / evolves • Value in ongoing process	Driven by deliverables: • Shared goals and results • Value defined by charter • Value in results delivered
Defined by Knowledge: • Interdependent Knowledge • Permeable boundaries	Defined by task: • Interdependent tasks • Clear boundaries
Develops organically: • Variable contributions • Managed by making connections	Develops through a work plan: • Everyone contributes • Managed objectives through objectives and work plan
Bound by identities: • Reciprocal contributions • Based on trust • Core group / coordinator	Bound by commitment: • Joint accountability • Based on explicit agreement • Team leader or manager

Table 6.8: The Key Differences Between Knowledge Circles and Teams

6.7   Knowledge Circle Roles and Responsibilities

The author proposed a raft of roles and responsibilities for the Knowledge Circle, suggested by Nickols, (2000) as being necessary in making a Community of Practice or Knowledge Circle work and asked the various groups for volunteers. Nickols emphasises the importance of nominating facilitators whose responsibility is to encourage, interpret and evaluate participation in cross community electronic forums. (Table 6.9)

Role	Description	Responsibilities
Sponsor	The Sponsor is the link between the Knowledge Circle and the formal organisation. They promote the value of KC's across the company, encouraging KC growth and commitment of resources	▪ Builds support for the KC among Senior Management ▪ Coordinates allocation of resources ▪ Removes barriers and obstacles to the KC
Champion	The Champion sets the strategy for KC's. He gives direction to and provides guidance to the KC	▪ Stimulates interest in KC's ▪ Works with KC leader to track progress of the KC ▪ Obtains official support when necessary ▪ Communicates the contributions of the KC to senior management and wider company ▪ Communicates company support to KC Members
KC Leader	The KC leader is an active member of the Knowledge Circle and is the acknowledged leader. He is a subject matter expert on the topics for discussion in the KC. N.B. Leadership in a KC can shift as the issues and concerns of the KC shift	▪ Interfaces with sponsor ▪ Promotes best practice within the KC ▪ Provides leadership in resolving problems with and in the KC ▪ Evaluates KC performance ▪ Is alert for potential KC changes – new members, topics for discussion etc.
Coordinator	The Coordinator ensures the administrative workload for a community is taken care of	▪ Plans and schedules KC activities ▪ Arranges for equipment / facilities
Facilitator	A Facilitator ensures circle meetings are productive for all members by acting as a independent KC expert	▪ Provides expertise about group dynamics and techniques to help the KC solve problems and evolve over time ▪ Ensures dissenting points are heard and understood ▪ Keeps discussions to topic ▪ Reconciles opposing points of view
Member	The Members are the people who populate the KC. Membership is voluntary, the members are self-organising and participate because they get value from their participation	▪ To share knowledge and experiences ▪ Participates in meetings and team room discussions ▪ Acts as a subject matter expert ▪ Raises ideas and concerns regarding the KC ▪ Is on the lookout for ways to enhance KC effectiveness e.g. new members, practices etc. ▪ Creates and updates the knowledge repository

Table 6.9: Knowledge Circle Roles and Responsibilities

The proposal was met with a level of scepticism by engineers involved in one of the launch meetings for Knowledge Circles.

British Senior Engineer

"Posh concept for something that should be happening already. People talking to each other! I'm wary of another initiative. Like the idea of a chat room for different groups, 'normal' language should be used.

British Engineer

"People could view these descriptions of the roles and responsibilities as management speak and it will turn them off!"

6.8 People to Tools

The third part of the strategy was to use information technology and create an infra-structure to guide people directly to the tools that they need to do their jobs. Tools, in this instance refer to the processes – global and sectional – and the codified knowledge documented by the company. Alavi and Tiwana (2003) report that in the majority of organisations codified knowledge is fragmented in many databases and NTCE is no exception. There are two types of Information Communication Technologies: integrative and interactive applications (Hayes and Walsham, 2003).

Integrative applications are structured databases that allow employees to store and retrieve project information. Knowledge repositories are a technical solution to the storage and retrieval of codified knowledge and provide a unified access point to content from various data sources. Knowledge Management is sometimes thought of as data mining. Data warehouses are used to convert large volumes of raw data into manageable chunks of interlinked information and it is assumed that valuable information is embedded in the data. Data mining is defined as the process of automatically searching for unknown correlations in the data by looking for interesting patterns anomalies and clusters (Alavi and Tiwana, 2003).

The author proposed to use technology to rationalise, systematise and connect these databases and develop a readily accessible system for the storage, retrieval and transfer of information which will act as an organisational memory for stocks of

organisational knowledge). The knowledge stock model refers to knowledge that can be codified and made available in repositories. Expert systems are built on rules derived from the process of codifying valuable knowledge. The rules are used by others who lack the necessary expertise thus reducing the overhead of routine reapplication of that knowledge. It also allows the experts to concentrate on other activities which are difficult to automate (Tiwana, 2002). The technology was also to be used to aid collaboration and knowledge creation by supporting learning and collaborative interactions. The proposal was to use the existing NTCE portal as a gateway to knowledge with a series of windows:

- Departmental Homepage (Figure 6.11)
- General Affairs Homepage (Figure 6.12)
- Knowledge Circle Homepage (Figure 6.13)
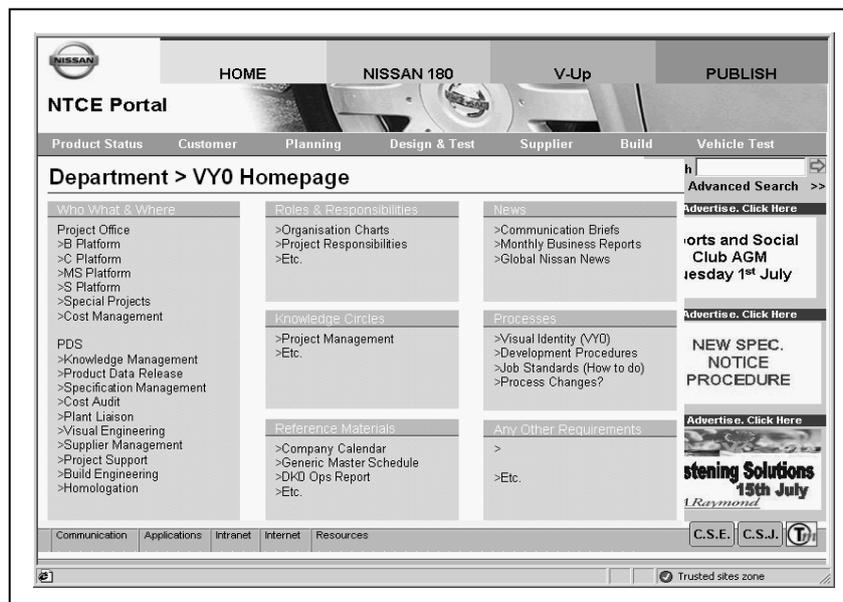
Figure 6.11: Image of Departmental Homepage
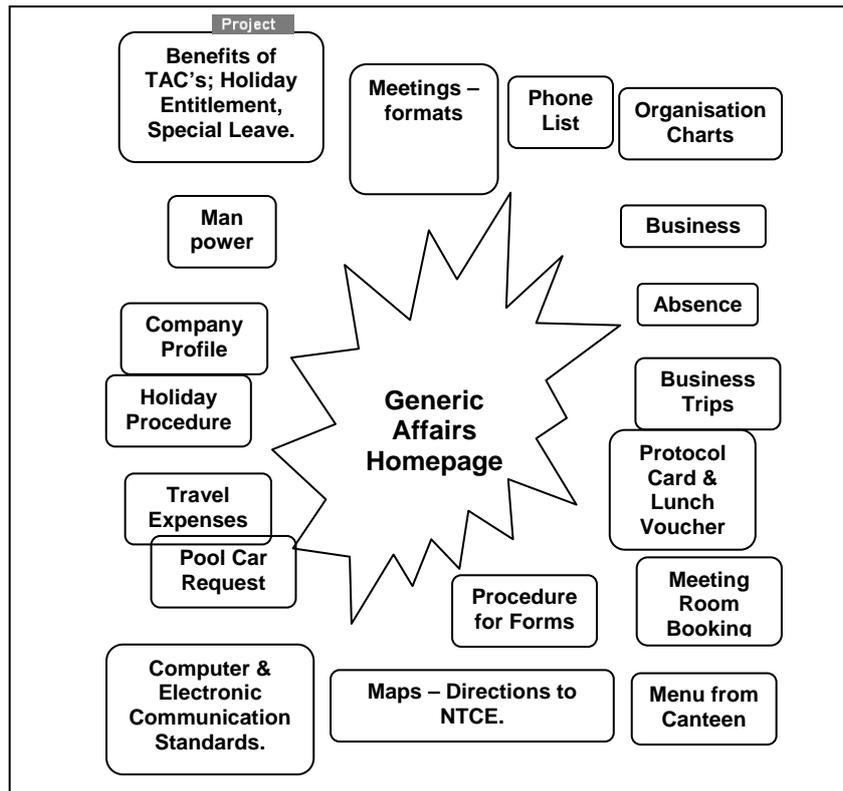
Figure 6.12: Image of General Affairs Homepage

Figure 6.13: Image of Knowledge Circle Homepage

The second information Communication Technologies is interactive applications (Hayes and Walsham, 2003). Interactive applications are discussion forums allowing individuals to share experiences regardless of physical location. Video Conferencing, Voice Over The Internet – Video Conference. Web cams. Modem etc. The author was

aware of these technologies and gave no serious consideration for them at the time of writing because he placed the emphasis on creating the necessary infrastructure for the aforementioned storage, retrieval and transfer of information

6.9 Audit

The fourth part of the strategy was to introduce and emphasis the use of knowledge audits within NTCE. The rationale was that the audit and the audit results would give the case for knowledge management credence and win support of the management team.

Tiwana (2002) claims knowledge audits are used to report on the strengths and weaknesses of the company and are also useful when making knowledge management strategies, designing knowledge manage systems and leveraging existing knowledge. Teece (1998) advises knowledge management audits also focus on intangible assets, including rituals, processes, structure, communities and people.
The goal is to invest in areas with the most potential for future strategic advantage. NTCE audits are proposed to be formal, systematic reviews of the efficiency, effectiveness and reliability of written standards and systems against explicit criteria. The results of an audit can be used to improve quality and efficiency within the business. They are a catalyst to ensure that current practice meets the expected level of performance and, where this is not the case to recommend countermeasures. The objectives of NTCE Knowledge Audits are:

- Monitor the effectiveness and implementation of written standards and systems
- Identify where new written standards and systems may be required
- Identify significant trends or deficiencies
- Identify opportunities for training
- Identify best practices in written standards and systems implementation
- Investigate known or suspected areas of weakness or omissions in written standards and systems

- Recommend ways in which written standards and systems or their implementation can be improved

6.9.1   Proposed Audits

The author suggested a three pronged audit strategy to gather knowledge. The strategy comprised of a Preparation Audit, Knowledge Capture Audit and a Skills Audit. See Figure 6.14: Audit Strategy Proposal.

Preparation Audit: The proposal was to use the project schedule and raise potential concerns or risks to the programme that might occur over the next six months. These concerns would then be categorised into Organisational, Departmental, Sectional or Individual groups and then themed for prioritisation and management of key concerns.

Knowledge Capture Audit: It was proposed to standardise the format of the monthly report and make completion of the report mandatory across the company. These reports would record what needed to happen when in the project and why, and would be used as a base line for the next project. The reports would be stored on line and linked to relevant files, minutes and development reports. Case studies would be made of the major concerns and used to enhance learning.

Skills Audit: The third audit procedure was to create a skills matrix for each engineer showing the necessary technical, processual and core skills needed for the job. These matrices would be owned by the engineers and reviewed every six months with the manager. In taking ownership, the engineers accept and become responsible for their own training and development rather than be reliant on the company.
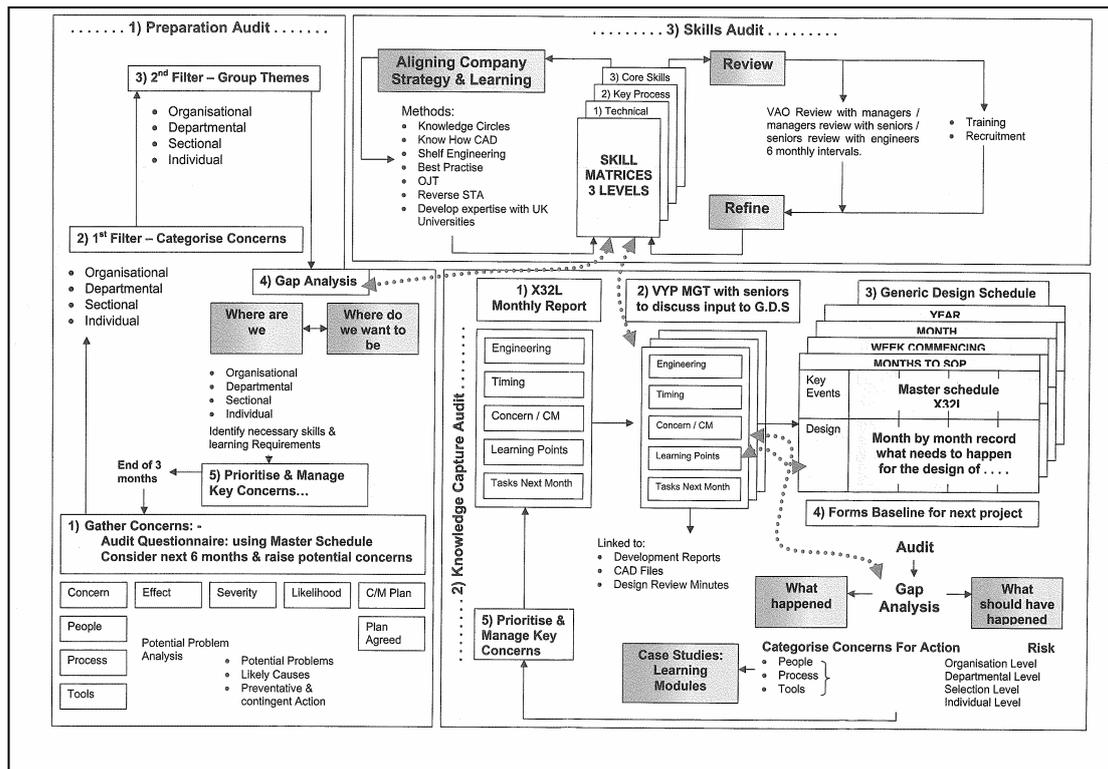
Figure 6.14: The Audit Strategy Proposal

Unfortunately, the author was unable to finder a backer for the proposal and the Assistant Chief Vehicle Engineer of the project for which it was designed was dismissive. It was seen as extra and necessary work probably because of the pressure the team was under to deliver.

"These guys have enough to do without filling in even more forms. They are up to their necks in it! Sure, I understand what you're trying to do by capturing and sharing knowledge. It makes sense to learn from experience but we haven't the time. I'll agree to have a review meeting at the end of the projects we can discuss what we've learnt but nothing else. OK?" Assistant Chief Vehicle Engineer

6.10 Knowledge Management Metrics

Given the importance NTCE puts on metrics and "bottom-line thinking" (Chapter 5: 102) the author also proposed to use knowledge management performance measures to gain management support and help them manage the business.

"Knowledge Management initiatives should continually gauge their progress in achieving their objectives to ensure success. Given the complex and dynamic nature of modern organisations, Knowledge Management as well as all other organisational initiatives cannot guarantee that plans and strategies will succeed. However, well designed performance measures will yield insight to help managers understand and adapt their organisations." (The Department of Navy, 2001)

The metrics were chosen to:

- Justify the initiative.
- Monitor progress and provide feedback
- Provide targets
- Measure, retrospectively the return on investment
- Develop future benchmarks
- Aid learning from lessons learned

The author also proposed to use a set of metrics for the Knowledge Circles based on work by The Department of Navy (August, 2001).

Activity	Metrics
Knowledge Sharing	Ranking among top contributing units for the last time period
	Number of resources contributed per person per time period
	Number of times resources were accessed
Raising Quality	Percentage of firm's knowledge codified on Portal
	Percentage of information needed that employees can find on Portal
	Percentage of information that is less than one year old
	Percentage of material that is older than one year that has been revalidated
Use of Portal	Resources most often downloaded or accessed
	Total number of unique users per time period
	Total number of unique contributors per time period
Knowledge Efficiency	Time saved in product development / regulatory process
	Time to implement a best practice

Table 6.10: Knowledge Circle Metrics

6.11 Presentation to NTCE Directors

The author presented his strategy for Knowledge Circles to NTCE Directors in March 2003. This is a summary of their comments:

- Excellent bottom up approach to share learning
- Great tool to improve technical quality.
- Directors to decide strategy for B32A and decide which Circles should be wide and thin and which should be deep and narrow.
- Knowledge Circles should be self-sustaining.
- Objectives should be rewritten to include Knowledge Circle Objectives
- Knowledge Circles are a summary of each person's learning.
- True bottom up approach staff have to be willing to share learning.
- Company to consider how to reward and recognise the importance of Knowledge Circles

The Directors gave permission to pilot three Knowledge Circles with the committed resource.

Activity	Resources

3 pilot Knowledge Circles in 2003:
    Project Management Department
    Cockpit Module Section
    Noise Vibration and Handling Performance Section
	1 half day meeting per month for each Knowledge Circle

X61B (Codename for new Pathfinder) Knowledge Capture	10 hours per person over 2 months

Knowledge Circle Infrastructure
    Knowledge Circle Homepages (short term c/m)
    Collaboration areas ('Team rooms')
    Develop long term requirements
	Joint development by VY1 & Knowledge Circle throughout 2003

Table 6.11: Request for Resource for Knowledge Circles

The Directors may have agreed but implementation of the circles was not straight forward. They had given a direction but section managers and the engineers themselves still had to be convinced. The Assistant Chief Vehicle Engineer for X61B, the code name for the recently launched Pathfinder, a Sports Utility Vehicle, did not see the need for the knowledge capture pack and instructed his joint development team not to use it. The proposal for knowledge circles was also met with a level of reluctant cynicism.

"I see what you're trying to do and it's quite ambitious. Really they are about personal relationships. They'd be hugely beneficial if we could get global knowledge circles. It would mean we could keep in contact with our Japanese engineers when they return to NTC but we'd have to start with a simple structure." NTCE British Engineer (1)

"Is this just another initiative? What's different about this? What's going to stop it failing?" NTCE British Engineer (2)

"People might want to be involved in Knowledge Circle meetings because it's the right thing to do. You could make a career out of attending Knowledge Circle meetings!" NTCE British Engineer (3)

The Manager of Nosie Vibrantion and Handling would not, under any circumstances support the idea of knowledge circles.

"We're too busy to sit around talking all day. Cannot see how having a Knowledge Circle would benefit the section. We know what we're doing. We don't need this. It's a complete waste of time."

It also became apparent that company and sectional processes were not in place and key events on the master schedule were either, not understood or there was disagreement about the activities. Design refused to comply with a request to complete proformas outlining the purpose and input and output of each process. Towards the end of 2003 work stopped on the Knowledge Circles. Nissan Japan was working with IBM to produce an enhanced user focused intranet to improve

communication and collaboration called Workforce Integration at Nissan (WIN) which would provide the global tools the company needed (Chapter 2: 33). It was said that IBM had made a strategy after consulting with all Nissan subsidiaries but this is not the case. The man who devised the strategy telephoned the author the day before he made his proposal to Nissan Board and said he had only just learned of our work. This may sound surprising given that the author had presented his work to his knowledge sharing colleagues in NTC on at least three occasions prior to the call but this is indicative of the silo organisational culture which exists within NTC. The author was talking to colleagues responsible for knowledge sharing and not creation, who wee responsible for WIN. Never the less the experience gained from Knowledge Circles was put to good use when the author and his section led the first pilot of global e-rooms for the introduction of a Global Bill of Materials (G2B) for a new model.

6.12 Conclusion

This Chapter opened the action oriented part of the study and began to determine the scope and role of a knowledge manager and the meaning of knowledge management within global Nissan. The author explained difficulties he experienced in trying to implement his strategy for knowledge creation, storage and retrieval, transfer application and audit and his proposed re-design of the company intranet, the use of Knowledge Circles and the development of Planning Drawing Design Contextual Maps as learning tools. In this chapter, the author has made the following theoretical and practical contributions to knowledge.

6.12.1 Theoretical Contributions to Knowledge

- Knowledge management at Nissan is about aligning strategies and developing the models, tools and methodologies to improve the competitiveness of the company.

- Knowledge management initiatives need high level sponsorship within Nissan if they are to be successfully adopted by the company because people in positions of authority have the power to dictate what is learnt and what is worth knowing.

- Knowledge management initiatives must be of use to people and be seen to have practical applications.

- There is no formal knowledge capture or transfer processes in global Nissan.

- A suggested first step in managing knowledge and making the necessary strategies is to understand and manage the information on which to build knowledge.

- The key to organisational learning and knowledge capture within Nissan are the Master Schedules. These schedules are the gateways or frameworks to help the company mine for information.

- Learning is sometimes compromised by perceptions of individual and organisational identities and challenging these identities can be threatening because often, our self perception is different to how others see us

6.12.2 Practical Contributions to Knowledge

It would be useful for researchers and practitioners to

- Understand what the word "practical" actually means in the context of their work and who makes the judgement as to practicality to ensure research time is not wasted

- Understand that learning is sometimes compromised by perceptions of individual and organisational identities and challenging these identities can undermine charge initiatives.

- Recognise that knowledge management has to encompass and improve business processes. These processes can be codified and articulated as business practices or they can be the less understood processes of how human beings relate to each other in organisations. These processes are conduits of business practice and traditions. Continually reflecting on process is the way we generate meaning together. The organisation must continually reconstruct

their nature in order to keep them alive and remain sensible in the face of rapid global change.

The next Chapter describes how the learning of this chanter was utilised to make a proposal to Organise Around Knowledge.

Chapter Seven

The Proposal To Organise Around Knowledge

7.0 Introduction

This chapter builds on the previous chapter and shows how and why the author adapted his strategy and the focus of his research and describes the background and philosophical underpinnings of the Organise Around Knowledge Methodology which he made to the Directors of NTCE in July 2004.

SECTION TWO: Understanding the Impact of Organisational Culture **Chapter Four**: Organisational Culture and the Management of Change **Chapter Five**: The Impact of Organisational Culture on Knowledge Management and Learning at Nissan	**SECTION THREE:** Developing and implementing a Strategy to Organise Around Knowledge Chapter Six: Putting a face to Knowledge Management at NTCE **Chapter Seven: The proposal to Organise Around Knowledge** **Chapter Eight:** Pilot to Organise Around Knowledge **Chapter Nine:** Organise Around Knowledge Methodology

7.1 A New Strategy

At the beginning of 2004 the author felt deflated; the majority of his knowledge management strategies had failed to find sponsors (Table 7.1). The three pronged audit strategy to gather knowledge comprising of a Preparation Audit, Knowledge Capture Audit and a Skills Audit had been rejected and the strategy to reconfigure the existing NTCE Portal and develop a business infrastructure had been made redundant by the WIN team working in NTC who were about to launch a global portal and asset repository system. The proposal for Planning Drawing Design Contextual Maps had also been dismissed by the Japanese Design Director as impractical with the words:

"It will not work. Do you know how many items (inputs to the planning drawing) *there are? Thousands. It would take forever. It cannot be done."*

Knowledge Management Strategy	Judgement
Capture Design Key Processes	✓
Knowledge Capture Packs	✗
Planning Drawing Design Contextual Maps	✗
Knowledge Circles	✗
Portal: Business Infrastructure and Asset Repository	✗
Audit strategies (Preparation/Knowledge Capture/Skills Audit)	✗

Table 7.1: Status Proposed Knowledge Management Strategies

The lesson about making knowledge management initiatives "practical" had hit home; it also had to appear practical. The company was not looking for something that was feasibly practical and viable in the long term. The Directors were not interested in knowledge management; neither were they prepared for mammoth change. Easterby-Smith et al. (2003) made the point that managers tend to be powerful and busy people and unlikely to allow research access to their organisations unless they see some commercial or personal advantage to be derived from it. People and organisations, despite the potential positive outcomes are resistant to change and according to Mullins (1999) this appears to be a common phenomenon. People, it seems are naturally wary of change and associate it with being out of control. The only changes the Directors were willing to accept had to be imposed from NTC or geared to small scale efficiencies that reinforced the image that they were in control of the business.

The author decided that rather than continue investing time in wide ranging pilots and then trying to convince the Directors of the potential benefits of the initiatives the time had come to focus on what the main power brokers in the company wanted. NTCE is a modern business and can be viewed as a coalition based political system (Cyert and March (1963). The Directors are in positions of power and have what Weber (1947) called "rational legal authority," in that the power bestowed on them, because of hierarchical positions gives them the right to order others to do things or refuse other people's requests.

Handy (1993) links positional power with resource power by arguing that if some control over resources does not come with the position, the source of this power will

be invalid. Management, because of its central role in the distribution of scare resources in organisations, is "steeped in politics" and that those promoting learning organisations and knowledge management have to take into account power and politics (Coopey and Burgoyne, 1999; Hayes and Walsham, 2003).

 The author chose to use the functional and processual approach for assessing and minimising the effects of political ramifications at NTCE (Knights and McCabe). The functional approach views politics as an aberration and sees the author working closely with the Directors to eradicate what is assumed to be employee irrationality. In the processual approach, change processes are seen as being infused with group politics which in turn, subvert management's strategies if not properly managed. Both approaches are useful, assuming that those leading the company are not themselves, being "irrational" and that their own political actions are not subverting organisational strategies. The only remaining strand of the author's original strategy was the capture of key development processes and he had a sponsor, the Assistant Chief Vehicle Engineer of the B32A project. The ACVE was a vocal advocate of Fast D (Chapter 9: 258)and he still had a stack of original copies of Fast D processes clipped together in his desk drawer.

"I use them all of the time," he said. "Only the other day I was in a meeting with the planning group and someone asked how something was done. I showed them one of the Fast D processes and said that's how we used to do it. Not sure how it's done now but again, no-one is. We've to get back to basics." NTCE Assistant Chief Vehicle Engineer

The Japanese Managing Director of NTCE also lent his support:

"NTCE is much better at looking at processes and how to manage than NTC. In NTC each section manages in its own way. There is no consistency. NTC do not think as process in the way NTCE do. They do not see the importance of systemising a process and following a process because it is all captured in the minds of the engineers. There is no need to write it down but here, we do."

The author proposed to use their support as a catalyst for cultural change, the idea being that mapping company processes would highlight what needed to be managed and what needed to be learnt. The rules of Fast D, were that strategies could only be written on one A3 sheet and the accompanying process flow and the "How To Do" (i.e. How to complete a Design Note, How to complete a Specification Tender) on A4 sheets. The argument was that people were too busy to read unnecessarily detailed procedures, besides in a multi national company, was it fair to expect everyone to be able to read and understand the complexities of written English? Keep it simple: Anything that needed to be known could be captured on one sheet of paper (Palmer, 2004). The process flows and "How To Dos" were lauded as best practice and each engineer kept a copy of relevant processes in a leather backed NTCE filofax (Figure 7.1):
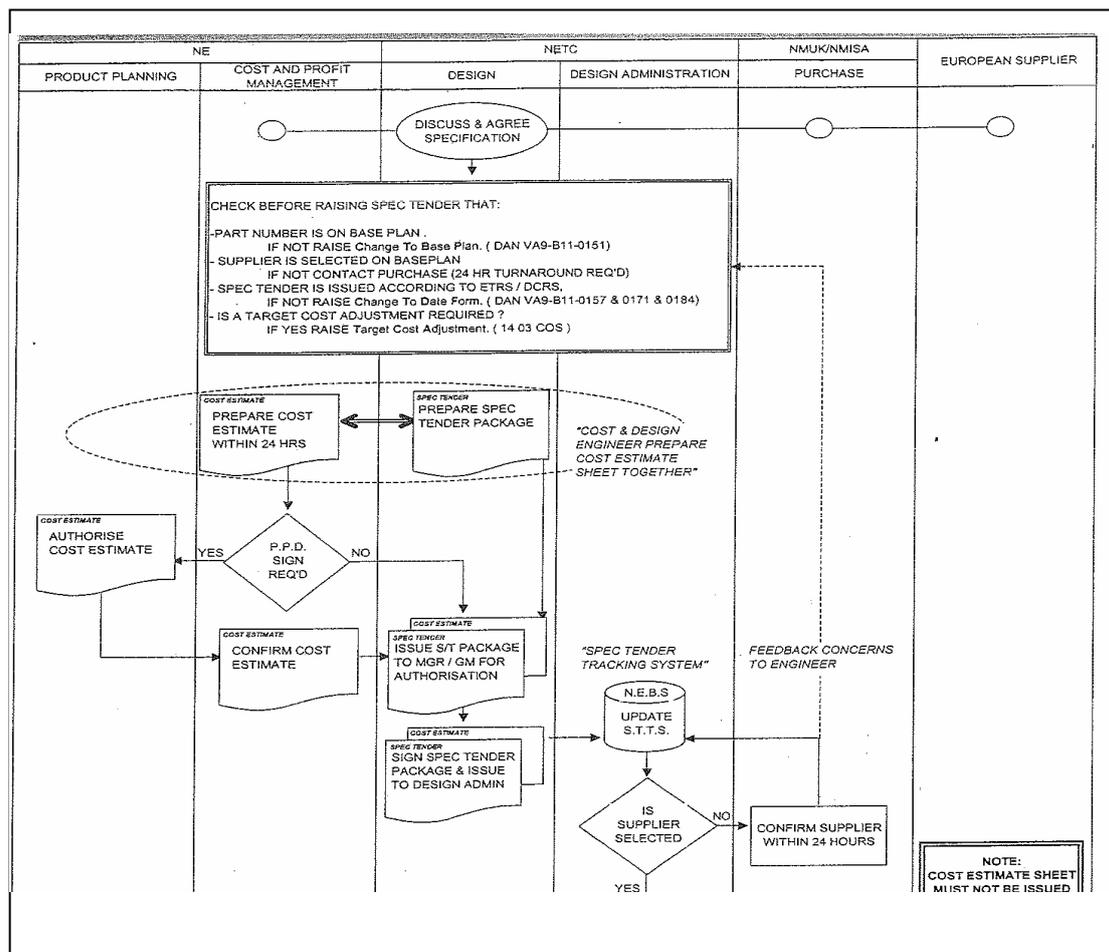
Figure 7.1: Example of Fast D Process Flow

7.2 Four Fields Maps

The author saw how the use of process flows could be improved when he visited one of Nissan's suppliers (for Heating, Ventilation and Air Conditioning units) and came across "Four Field Maps." The supplier told the author that they were a TQM tool but the earliest reference the author can find is by Dimancescu (1992) who found these maps being used at Komatsu, Texas instruments' semiconductor plant in Kyushu, Japan in the late eighties. A four field's map shows the process at its highest level and has links into detailed elements. (Not dissimilar to Business Process Re-engineering Maps (Hammer and Champy, 1992)). The making of the maps stimulate cross functional discussion and learning. Dimancescu argues in his book that it would be possible for a company to use this method to develop a portfolio of corporate process maps, each one describing process methods, procedures, experiences and relevant testing methods and writes:

> "Four fields mapping is one of the most elegant and productive techniques used by cross function teams. It allows the members to determine in advance not only who does what and when, but also the flow of information, or who needs to know what when. This collaboration is a critical feature of a cross function process. From the start, it forces team members to specify how they will identify and communicate customer requirements systematically both across vertical department and suppliers."
> (Dimancescu, 1992 :100)

A Four Fields Map integrates four information fields (Figure 7.2):

1. The team members: shown in vertical fields.
2. The phases: showing entry and exit points.
3. The tasks to be performed.
4. The standards used.
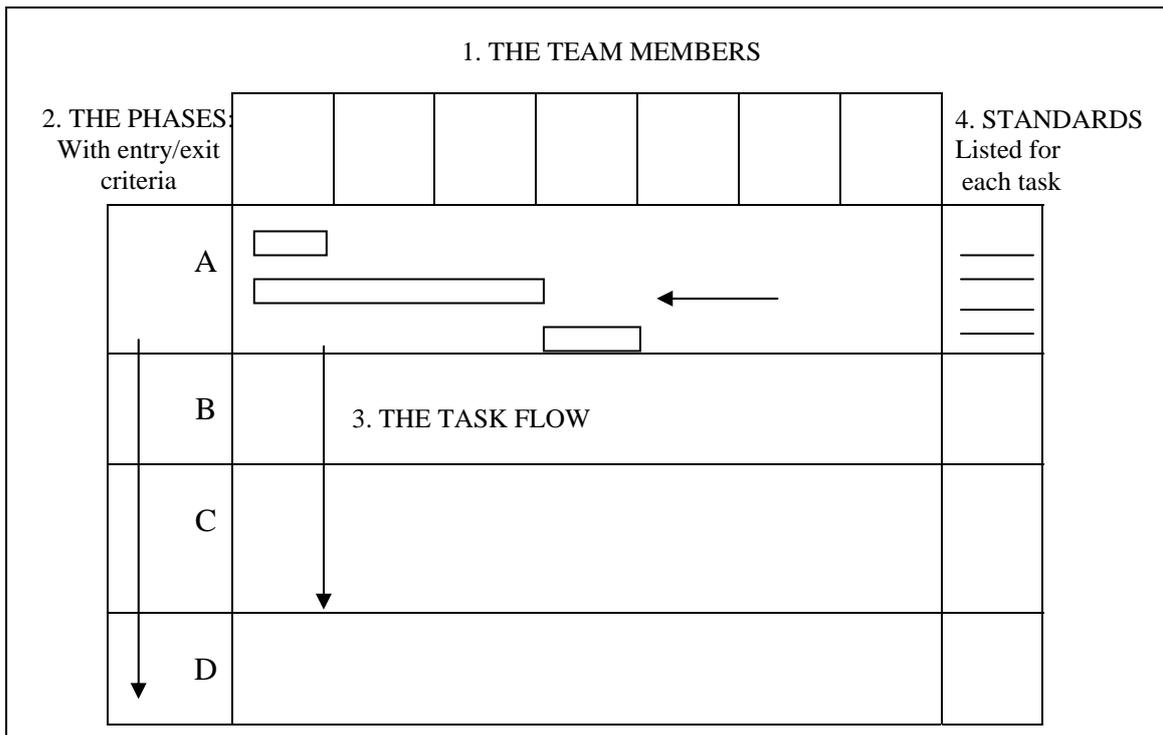
Figure 7.2: Basic Layout of a Four Fields Map
(Adapted from Dimancescu, 1992).

Whereas Fast D had been about capturing processes, the author was interested in knowledge and learning and proposed to rename four fields maps as Four Field Knowledge Maps. The shift from "Process" to "Knowledge" was an intentional ploy to start to influence the culture of the company because using the term "Knowledge Maps" centres the activity on people rather than process. Nonaka and Takeuchi (1995) purport that individuals are conduits for learning and knowledge in a collaborative setting and Dickson and Weaver (1997) report that the effect of context can interact with individual characteristics to affect learning. Accepting that organisational learning is the process through which an organisation constructs or reconstructs knowledge (Huysman, 2000) the author proposed to use these maps as frameworks for discussion and learning. In mirroring the organisation the maps become a construct for institutionalising knowledge. Berger and Luckman (1966) describe three phases or moments that can be discerned during the institutionalisation of knowledge: externalising, objectifying and internalising. In the case of the knowledge maps these moments occur when the map is initially made and knowledge is codified by the

experts (externalisation), when the way of working is taken for granted (objectifying) and finally when it becomes accepted as organisational knowledge (internalising).

7. 3 Design Key Processes: Design Review

The author had already made an inter-relationship map (Chapter 6: 151) which showed design's key processes how they interrelated and the relative importance of each one. The map also confirmed the results of a Fast D audit, made in 1997, which asked engineers to rate which of the processes impacted them most. The key processes are:

- Planning Drawing
- Design Reviews
- Target setting
- Concept sheets
- Digital Lots

At the Directors' request the author and the senior of the knowledge management section updated the Fast D procedure and made the associated Four Fields Knowledge Maps for the Design Review. Presentations of the process were also made to Design Seniors and selected engineers but only 13 people attended from an expected audience of 30. The Design Director was so concerned about the quality of design that he invited Nissan's global expert to come from Japan to give a series of lectures about the Design Review process at NTCE. The author invited himself to the lectures and requested a meeting with the expert to understand the design review philosophy. Note that the author "invited himself to the lectures" and "requested a meeting with the expert" even though, it could be argued as logical to have involved knowledge management in such an important activity from the start.

The author received telephone calls from the Design Director's intermediary, who was arranging the expert's visit to the company asking why he wanted the meeting as Takahashi san, was on "a very tight schedule." After some discussion the author's request was granted but he thought the meeting would have only seemed "logical" to

the Design Director had he valued the role of knowledge management NTCE. The global design expert was very forthcoming and gladly outlined his design review philosophy and left Japanese documents explaining the detail. These were translated and the procedures and Knowledge Maps updated to reflect the latest position. To encourage people to read the procedures key points were translated into Japanese and Spanish and the option became apparent in the electronic format when the reader held the mouse over highlighted text (Figure 7.3).

Figure 7.3: Extract from Design Review Procedure with key points translated into Japanese and Spanish

7.4 Design Review: E- Learning Game

To encourage people to learn about Design Reviews the author sanctioned an e-learning design review game, a first for NTCE. The format was based on the "Who Wants to Be a Millionaire" television programme. Information technology can be used to facilitate collaborative interactions between people and groups and also to support an individual's learning experience and the knowledge creation process and numerous studies have proved e-learning to be effective. (Alavi and Tiwana, 2003). E-Learning systems are computerised systems, where the learning is mediated through technology and offers distributed learning environments, where learning interactions are dispersed over time and, or distance. Two models of distributed learning have

been described as synchronous and asynchronous (Alavi and Tiwana, 2003), The synchronous model resembles a classroom in which the instructor and the students are located in two or more remote locations. In the asynchronous (or online) model, the student is in charge of his own learning and is able to access the course material in his own time and pursue it at his own pace. The design review game was based on the asynchronous model. In the game, fifteen questions, increasing in difficulty were posed and the engineers were given a choice of four answers, only one of which was correct. The game proved to be very popular; in the first two and a half days after launch 414 engineers visited the site staying on average for 17 minutes (Figure 7.4):
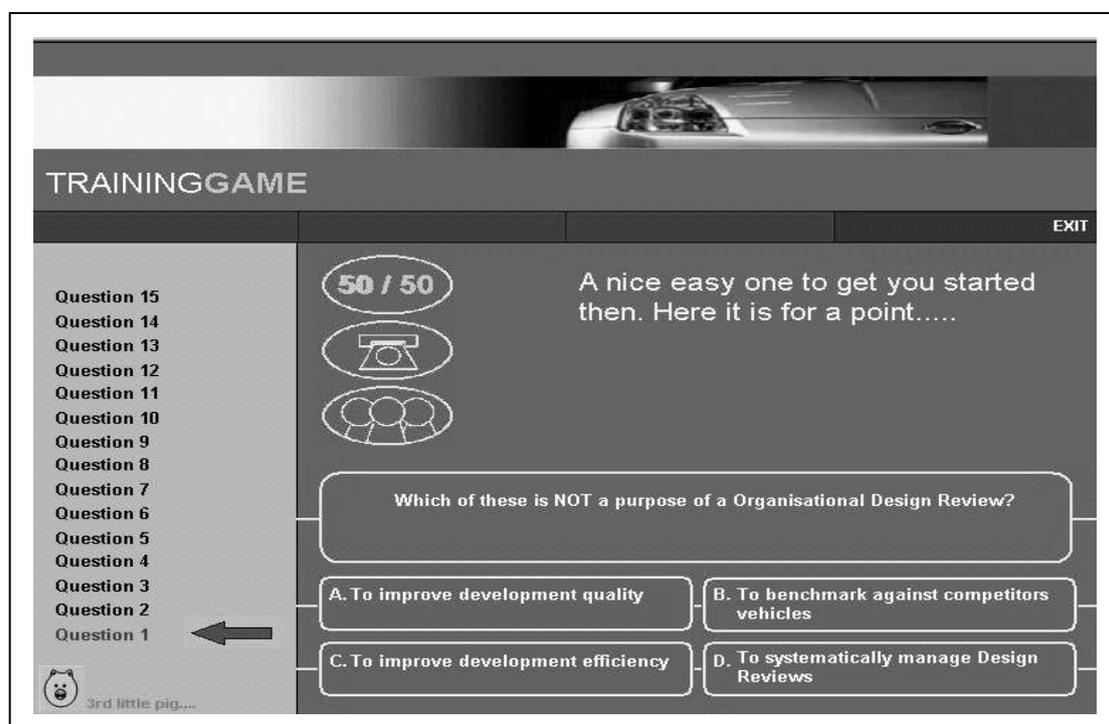
Figure 7.4: Screen Shot E-learning Design Review Game

7.5 Design Review: On the Job Training

The author showed the game to the global design expert when he was on a subsequent visit to the company. It made him smile but insisted the only way to learn was on the job training. The author asked how he could be so certain. His answer was short but enlightening, illustrating yet another cultural difference between British and Japanese engineers. He said:

   "Because NTC General Managers say so……"

It seems the word of NTC General Managers is sacrosanct. These are all powerful people who are charged with delivery and how they manage their resource is their prerogative. Through discussion it transpired that although Takahashi san was acknowledged as a global expert, he had developed and successfully trialled his methodology with one General Manager at NTC and in consequence this methodology had been *'offered'* to the other departments for adoption.
In the West *"offered"* is often an euphemism for *"told"* but that is not always the case in NTC and although this was not the first time the author had heard this phrase used, it was still a revelation to discover that something as important as the process of design reviews was not standard company practice. It would be untrue to say that everyone in NTC is happy with the situation as the author discovered when talking to the General Manager responsible for Quality at NTC.

"I do not agree with this approach. It is left to the Manager's to decide how they run their business but there should be a standard and people should follow the standard. We must ensure quality and the way to do it is through standardisation." NTC General Manager

Nissan Technical Centre Japan relies heavily on on the job training (OJT) to ensure quality of design and Japanese seniors and managers take the responsibility of training their staff upon themselves. The training can take many forms, described by a Japanese colleague as *"just watch my back"* where the trainee learns by watching the expert, or by being asked to do something specific. (In the West "just watch my back" is often interpreted as protection). It is not uncommon for engineers to be asked their opinion about something and then be challenged about their response to test the level of their understanding. Often they are made to do this in the shape of written reports which will take an age to complete. This constant request for reflection and perfection leads to a deeper level of understanding and the assumption that knowledge is created through the socialisation process or the interaction between people. "Socialisation is a process of sharing experiences and thereby creating tacit knowledge such as shared mental models and technical skills" (Nonaka and Takeuchi, 1995:62). The following quotes are taken from transcripts of the global design experts while meeting with NTC General Managers about OJT.

"There is no effective training method to raise technical capability. We must concentrate on OJT." NTC General Manager (1)

"Engineers are like soldiers. We must establish fundamentals for each field of expertise. Once such fundamentals are taught we send them to the battlefield. But knowing the fundamentals will not produce a general in 20 or 30 years time. Of course we must provide a minimum level of education. Classroom lectures can provide no more than 5% of what is required. The rest is from OJT." NTC General Manager (2)

"Gaining a deep understanding of something, like a chemical reaction, requires certain duration of time. This can only be achieved by OJT." NTC General Manager (3)

"When it comes to developing future chief engineers, education is not useful. Fostering chief engineers can only be achieved through actual practice. (OJT)" NTC General Manager (4)

The General Managers are unanimous in believing that on the job training is the only way to raise technical capability and ensure quality designs. Again, this is a culturally mediated belief. In comparing American and Japanese approaches to Quality Control, Cusumano, (1985) reports that Japanese companies have never felt comfortable with the rigid rules and routines of Taylorism and in allocating responsibilities to workers and the labour management divide. Cusumano cites that the absence of powerful industrial unions and enforced job classifications in Japan, after the mid 1950s allowed Japanese companies to rotate employees freely and to assign them multiple tasks and train them as they saw fit. He argues that the vertical character of personal relationships in Japan made it seem natural for managers to make quality control a line rather than a staff function and to extend the responsibility to maintain quality to the factory level while reducing the roles of staff specialists. He continues that because employees stayed with a company for life, training was seen as a profitable investment and employees usually applied themselves to acquiring skills more seriously than transient workers did. The legacy of Taylorism and its clear division of

labour are apparent in NTCE. Generally, NTCE (British) engineers tend to want to be sent on training courses and to collect the associated certificate of attendance and learning. British managers and seniors also expect the company to provide the necessary level of tuition.

"Brits definitely expect to be sent on a course, especially when they are fresh out of university and in certificate mode. I imagine they think it makes them more marketable. It gives them something to trade on." NTCE British Manager

"I have enough to do getting the job done without training people. Don't see why I should. I don't need them to understand what they do. They just have to do as I tell them. I'm the expert. Not them!" NTCE British Senior Engineer

7.6 Design Review Quality

The Japanese approach to learning and more especially, the associated self-discipline does not necessarily apply outside of NTC. In separate discussions with the Design Director and Hanaoka san, the Company President, they confided that they were worried about the performance of some of the Japanese seniors, currently seconded to NTCE. It seems that they were not as diligent about the preparation and execution of Design Reviews as they had been when working in NTC. NTCE's Japanese Managing Director particularly wanted to understand the reasons underpinning what he considered to be a cultural dysfunctionality. The author devised and issued a questionnaire to six Japanese senior engineers and six local seniors who had worked in NTC asking them about Design Reviews and followed up with a series of one to one interviews.

7.6.1 Summary of Results from Questionnaire

There are different perceptions about the quality of design reviews held in NTC and NTCE. All of the Japanese Senior Engineers believe design reviews in NTC are more effective where on the job training is used to teach what is expected in the design review. They feel they have the same sense of responsibility when working in NTCE as they did in NTC but perceive local seniors as having a lower sense of personal

responsibility and that local engineers do not take design reviews as seriously as their counterparts in Japan. The majority of local Senior Engineers (with NTC experience) also believe design reviews are more effective in NTC but maintain they have a similar sense of personal responsibility as their Japanese colleagues. They believe that whilst local engineers do have a sense of personal responsibility, it is lower than that of the seniors.

The author followed up the questionnaire with off the record, face to face discussions with the seniors. The interviews with the Japanese senior engineers were mediated by a Japanese speaking English man who works in Knowledge Management. (Appendix 5)

"I'm aware that I'm not completely honest in design reviews. I know there's a problem, but I don't acknowledge it, thinking that I'll fix it later" Local Senior Engineer (1)

"There doesn't seem to be the same approach as when we did Design Reviews for Almera. (Nissan vehicle launched 1998) *Then, questions were encouraged but now, if I ask questions there is a feeling of awkwardness. It's as if I'm spoiling the agenda".* Local Senior Engineer (2)

"I have attended design reviews in NTCE where there are no representatives from Test, Marketability or Nissan Europe Production Engineering." Local Senior Engineer (3)

"I need to hold a New Mechanism Design Review, but I don't know what's involved. What things do I have to consider?" Local Senior Engineer (4)

"Design Reviews need a reviewer with technical experience. The managers in NTCE have little technical experience" Japanese Senior Engineer (1)

"The feeling of tension and anxiety about design reviews is not present in NTCE" Japanese Senior Engineer (2)

Design Reviews are not only a check on the current design status they are also a time for discussion, interrogation, reflection and learning. They are a stage on which individuals can become encultured in the role of a Nissan Engineer (Brown et. al., 1989) and accepted as such by their peers and managers. In this way, learning is more about developing an identity and becoming a practitioner through social interaction with others than it is about learning objectively about the practice of being an engineer (Brown and Duguid, 1991) but if learning is situated in practice, then practice precedes knowledge (Hedegaard, 1995).

In NTC, there is no standard process for Design Reviews; engineers learn what is acceptable from their seniors and managers through ojt (on the job training). The social processes of holding a design review, manifest themselves externally first and then act as a conduit for knowledge sharing and creation and are internalised through a transformational process. During socialisation, individuals share experiences and develop common mental models. Vygotsky (1978) calls the distance between the actual development level of individuals using their own means and the potential development level of individuals under the guidance of those more capable, the zone of proximal development. The zone of proximal development is dependent on a shared situational understanding which is known as inter-subjectivity and "is the act of transcending the private, and becoming one with the other." (Plaskoff, 2003:165).

This is not happening to the same level at NTCE and this inability to learn from each other is in danger of undermining whatever trust there is between the groups and engender a defensive attitude toward sharing knowledge (Child and Rodrigues, 2003).

Knowledge Maps can be used to align the cultural models by identifying common reference points for the design review (Rogoff, 1990) but they are frameworks for learning; the depth and detail of knowledge needed to make a design review cannot be made explicit and codified on the map because in this case, experience is the key to learning . The

> "rules of art (in this case the knowledge map for a design review) can be useful, but
> they do not determine the practice of an art; they are maxims, which can serve as a

guide to an art only if they can be integrated into the practical knowledge of the art"
Polanyi (1962: 50)

What needs to be known must be passed from the manager or senior to the engineer but to learn by example is to submit to authority (Tsoukas, 2003). Was the reason some of the Japanese seniors were not performing as well in Design Reviews as they did when in NTC because they consciously or subconsciously refused to submit to the authority of local managers who they considered inexperienced? Child and Rodrigues (2003) warn:

> "it also appears that people's awareness of their own culture and identity is promoted by the provision of more information about other societies or communities, which enables comparisons that clarify cultural distinctiveness. This enhanced awareness of national identity may add to the difficulties of achieving learning that relies upon the integration between different national groups." Child and Rodrigues (2003: 550)

McElroy (2003) believes the first generation or supply side of knowledge management has been about capturing, codifying and sharing valuable knowledge and getting the right information to the right people at the right time but in recognising that organisations are social systems and therefore, by definition adaptive in nature he distinguishes between knowledge management and knowledge processing and argues knowledge management is the management of knowledge processes not the management of knowledge. Knowledge processing is a social process that organisations follow in order to produce (make) and integrate (share) their knowledge. This was a useful distinction in helping the author define his role as a knowledge manager at NTCE and led to the philosophy underpinning the Organise Around Knowledge Methodology.

7.7 The Philosophy Underpinning the OAK Methodology

NTCE is driven by Company Objectives but is managed according to the dictates and experience of managers. At best, it works because of the extraordinary efforts and ambitions and relationships of the people involved. At worst, it is an inefficient piecemeal attempt which fails to deliver its objectives. It is a mistake to assume that

empowering staff by setting objectives, encouragement, devolved responsibility, management dictate or organisational structures will naturally lead to increased knowledge, learning and improved performance. Empowerment has to come from within; people have to feel comfortable with the idea and the author's strategy for organising around knowledge is to provide opportunistic frameworks for empowerment and self development which are aligned to the company strategy. Handy (1993) has likened the study of motivational theories to the search for the "Holy Grail" but the research seems to indicate that motivation is culturally mediated.

Nissan Global Culture is the amalgamation of cultures from multiple organisations, scattered across the globe which are unified by a common vision and harnessed by objectives. The question needs to be asked whether culture change be managed. Cultural change is dynamic and cannot be controlled, however by studying culture organisations can learn to accept, appreciate and understand the reasons for the differences and identify interventions which may assist in helping culture develop in a particular way, minimising the dysfunctional elements but making the most of the cultural strengths that each company brings to global Nissan. This is not the same as actively forcing change but by understanding the dynamics which cause the changes we can learn how to communicate that change within a cultural context. Efficiency, sustainability and the beginnings of a knowledge based learning culture can only be realised by organising around knowledge (Buckman, 2004). Currently, NTCE have a myriad of processes, some of their own making, others from global Nissan but often they are out of date and more importantly they are not interlinked so no-one really understands, or has an overview of how the business is managed as a whole. The author strategy for knowledge management at NTCE is to align company and knowledge management strategies by identifying and organising around the knowledge which is core to the business and the future direction of the company.

The first step of the strategy is to identify and codify core departmental and sectional knowledge and then to channel the efficient flow of that knowledge throughout the organisation. These organisational knowledge flows are mapped and become the frameworks for knowledge maps which structure and focus attention on the business need. Procedures, controls and processes, like the knowledge maps help to reinforce the social web of relationships (Bettis and Wong, 2003). These knowledge maps

reflect the way NTCE manages, or intends to manage, its knowledge. This can be through the use of Design Knowledge Maps, Development Knowledge Maps or general Business Knowledge Maps. Knowledge Maps include all of the information necessary to complete the task: objectives, ownership, responsibility, deliverables, stakeholders, knowledge flow, the timing and description of the task and a list of the necessary tools for its completion.

More importantly the Knowledge Maps are about "accountability," which in turn, will hopefully encourage open and frank dialogue; reflection and learning with the sole purpose of meeting the business needs. Learning is situated in the daily working context where knowledge gains meaning (Abma, 1999).The author writes "hopefully" assuming a positive response to the Knowledge Maps but accepts that some people may merely comply or manipulate their perceived contribution to the detriment of others.

 The term learning in organisations refers to the interwoven nature of the social and the cognitive. It suggests that the process of learning is constituted by the process of organising and learning takes place where there is a social need for it. In effect, the knowledge maps become agendas for learning oriented conversations that allow for the effective transfer of accurate and relevant information between individuals and groups (Argyris, 1993). The focus of the Knowledge Maps is on enhancing dialogue to engage organisational members in a learning process that focuses on the organisations goals (Edmondson and Woolley, 2003). The "openness" in this instance is direct and measurable, because the objectives are supported by clear definitions of the task and when it needs to be undertaken in relation to programme timing. Knowledge Maps can be used to assess necessary skill levels and because each Map is by definition, resourced in terms of cost, timing and capability they can be used for man-power planning to ensure work is fairly distributed across the company, which is a common complaint made by staff members (including managers).

7.8 Organisational Lives

The Knowledge Maps are also intended to structure the lives of people working in the organisation. Organisational lives often fail to meet fundamental human needs: the

need for status, law and order, territory and possessions and the need for emotional attachments, including care giving and receiving, the need for emotional and physical contact, and altruism (Griffin and Tyrrell, 2004). The author's premise is that organising around knowledge, clarifying objectives and specifying tasks and deliverables will facilitate the fair distribution for the responsibility for Knowledge Maps and help create a safe environment in which people can work and flourish as individuals and co-exist in a way that benefits global Nissan. Knowledge Maps can also be used to determine if work can be placed more cost effectively else where. Knowledge Maps can also be used to identity the necessary cultural mindsets to manage the business efficiently.

This is of course dependent on management; clarity does not always lead to equity and fairness. The mindsets of senior managers, especially their criteria for business success and their mental maps of factors are significant for achieving business success (Child and Rodrigues, 2003) and also fundamental to creating safe working environments. These mindsets are national and organisational cultural givens and by understanding the meaning and implicit assumptions of them we can develop a suite of Knowledge Management tools (including Knowledge Maps) which add to the "bottom line" by facilitating the efficient management of knowledge, increasing capability and encourage reflexivity and learning. Knowledge Management is like any other function within Nissan, it is about deliverables and Knowledge Maps are the frameworks for developing the necessary cultural mindsets to deliver company objectives. They formalise relationships and encourage the development of informal relationships, mimicking the connectivity and collaborative aspects of a collective culture of Nissan Technical Centre Japan by clearly delineating objectives, ownership, responsibility and accountability.

7.9 Collaborative Frameworks

It is proposed that the Knowledge Maps become the collective and collaborative frameworks which underpin the organisation. They become the framing narratives which structure the meanings of organisation and within the organisation. The idea is to think of them as screen-plays people know and use, "scripts" to represent organisational life, identifying it as different from other aspects of life, which enable

people to participate on discourses of organisation and make meaning of how to be in organisations and how to organise (Czarniawska, 1997). Company knowledge resides in relationships and it is through relationships that data and information become actionable and by definition knowledge. The way Nissan employees relate to each other is a key to the success of the company. Knowledge is articulated in relationships, so any relationship is about shared knowledge. Relationships enable the making of meaningful connections and sustainability is pursued through the creation of the necessary cultural frameworks to manage those relationships - clarifying, codifying and mediating expected cultural mindsets. This will lead to new behaviours and new organisational cultural norms and to a deeper understanding of our knowledge base and expertise-creating arenas for creativity and innovation.
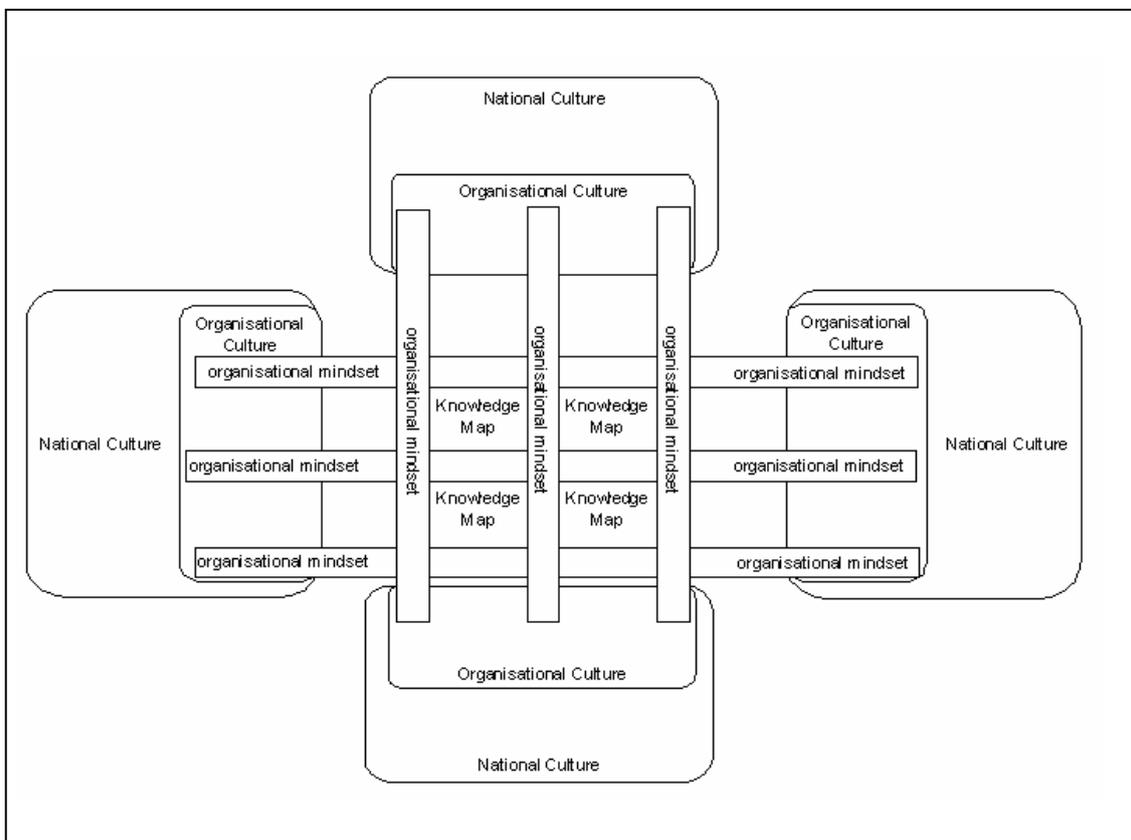
Figure 7.5: The Cultural Lattice

The key to sustainability and implementation is in recognising and managing within the cultural constraints of the company with a focus on understanding the attributes of the organisational cultural lattice which link a series of knowledge maps that are core to Nissan's business. The lattice (Figure 7.5) is a permeable conduit, linking, and

accepting the differences between cultures and shaping organisational mindsets and at a global level the lattice spans nationalities and countries. Previously, NTC and NTCE managers and engineers have used the same terminology but had different understanding due to different cultural frames of reference. The aim of the author's strategy to Organise Around Knowledge is to define a common mindset with a common meaning, allowing for different cultural interpretations about how that mindset can be fostered. The intention is not to remove the differences in culture but to overcome the effects of those differences.

7.10 Organisational Mindsets

The author imagines these mindsets to be conduits for dialogue as envisaged by David Bohm, (1917-1992) the distinguished physicist. The word "dialogue" is derived from the Greek, *dialogos*, with *dia* meaning through and *logos* meaning the word. A dialogue can be between numerous people, but anyone can have a sense of dialogue within himself. Bohm argues that:

> "The picture or image that this derivation suggests is of a *stream of meaning* flowing among and through us and between us. This will make possible a flow of meaning in the whole group, out of which may emerge some new understanding. It's something creative. And this shared meaning is the "glue" or "cement" that holds people and societies together." (Bohm, 2004:6)

In contrast, a "discussion," means to break things up and is about analysis, where people argue different points of view. Discussion is a competition whereas, a dialogue is a process, which according to Bohm explores the nature of humanity and, perhaps most importantly, he proposes that thought, is generated and sustained at the collective level rather than being an objective representation of reality. This approach leads people to question the values of culture, meaning and identity of a fragmented world. Dialogue is about understanding and challenging the assumptions, or thought processes which underpin society. It is about the development of common minds and meanings which are capable of constant transformation and change.

"If we can all listen to each other's opinions, and suspend them without judging them, and your opinion is on the same basis as anyone else's, then we all have "one mind" because we have the *same content* – all the opinions, all the assumptions. At that moment the difference is secondary. Then you have in some sense one body, one mind. It does not overwhelm the individual. There is no conflict in the fact that the individual does not agree. It's not all that important whether you agree or not. There is no pressure to agree or disagree." (Bohm, 2004: 32)

According to Bohm, people naturally assume their representations are true pictures of reality rather the conditioned reflex of unexamined memories. The challenge is to test those realties which are often tacitly formed and held at a collective level. He writes about literal thought and participatory thought processes. Literal thought is results oriented and aims to capture "what is" practically and technically. Literal thought is the core of the author's organisational mindset. Participatory thoughts are not bounded, they are sensed, tacitly held and culturally tuned and have underlying relationships with one another. The author intends that people become aware of these thoughts through structured dialogue about knowledge maps (Figure 7.6).
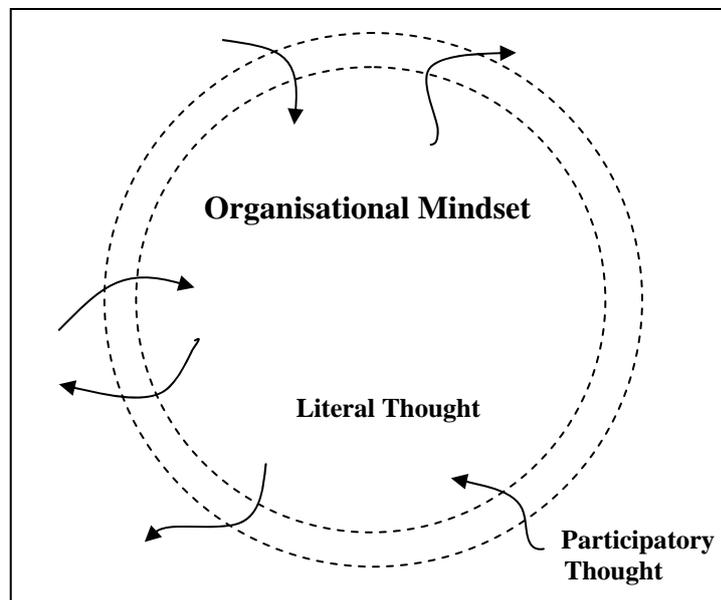
Figure 7.6: Cross Section Through the Organisational Mindset

Bohm's theory can be extended to apply to people of the same nationality working in different organisational sub-cultures. In the case of NTCE this includes the organisational subcultures found not only in the various divisions and the associated departments and sections found in:- Project Management Office, 3-3-3 Promotion

Office (Cost), Vehicle Engineering, Power Train Engineering, Vehicle Experiment, Product Development Support and Business Development but also the subcultures of the different professions and technical and non technical staff. Culture is so enormously influential and invasive that it cannot be managed into a homogenous entity. Whilst accepting that cultural diversity can be destructive the author also recognises that the richness of that diversity can also underscore organisational success. The premise of this study is that efficiency, sustainability and the beginnings of a knowledge based learning culture can only be realised by organising around knowledge and that knowledge management and organisational learning is a mindset that must be understood in a cultural context.

7.11 The Impact of National Culture on Organisational Culture

The author recognises the lasting impact that national cultures have on Nissan's organisational cultures and works within this understanding to create frameworks to facilitate the knowledge flows and clarify and align expectations and deliverables. He does not attempt to manage an idealised organisational culture or attempt to change the way people think; empathy and understanding are a desirable by-product rather than an objective. Neither is it possible to articulate change through a cultural lens, the language is considered too abstract and it is therefore important to have a sense of audience when promoting Knowledge Management initiatives. The concept of reciprocity is the ability and willingness to take on a new message and although the people shaping the company may understand and agree with the theory underpinning this study they pride themselves in being engineers and as such, are only interested in results and the practicalities of delivery. Academic rigour is an anathema because it is seen to be too theoretical is said to lack the urgency of the "real world."

The author proposes to concentrate on mapping and codifying organisational knowledge in Knowledge Maps whereby learning is fostered through people taking ownership of the maps and then using a set of predetermined questions which direct action, application and planning to continuously improve the efficiency of the process and the quality of the output. It is about developing the Nissan mindset as an organisational cultural norm, and is the "way we are," or rather "the way we aspire to be" and so becomes the arbiter of quality. Individual aspirations moulded to fit the

collective mindset are framed by continually probing and asking questions. The learning is in continually being able to ask relevant questions and then reflecting on answers rather than merely capturing and codifying answers, which are context dependant. The aim is to create a heuristic culture which incorporates the necessary expertise and conditions to facilitate learning and problem solving.

7.12 Presentation of OAK Kaizen Methodology to NTCE Directors

The author presented his findings about Design Reviews to NTCE Directors and also used this opportunity to present his strategy to Organise Around Knowledge, which was packaged, at the suggestion of his boss, and Director of Product Development Support as the OA K (Organise Around Knowledge) Kaizen Methodology. It was a deliberate ploy to link OAK with Kaizen. The Japanese word, Kaizen, generally understood as continuous improvement (the literal translation is "change for the better") was instantly recognisable and held deeply ingrained connotations of what constituted a Japanese company and would not be challenged. Kaizen is the process of making incremental improvement, no matter how small and achieving the lean goal of eliminating all waste that adds cost without adding value (Liker, 2004). The argument for OAK was based on the belief that any organisation positioned for the future has to be organised around knowledge.

> "We've come to realise that an organisation positioned for the future will have to be organised around knowledge – how to create it, share it, capture it and apply it – rather than around process. Once everybody in the company is in the network for the business at hand it only takes a slight shift of thought to open the way to an organic organisation. To activate this organic organisation requires a major cultural change but it comes more and more easily as individuals learn to assume responsibility to making things happen for themselves." (Buckman, 2004:Xiii)

Imai (1986) argues there are two contrasting approaches to progress, which he calls "gradualist," and "the great leap forward approach." He argues Japanese companies favour the gradualist approach whilst companies in the West rely on innovation or the great leap forward approach and writes:

"Western management worship at the altar of innovation. This innovation is seen as major changes in the wake of technological breakthroughs, or the introduction of the latest management concepts or production techniques. Innovation is dramatic, a real attention getter. Kaizen on the other hand, is often un-dramatic and subtle, and its results are seldom immediately visible. While kaizen is a continuous process, innovation is generally a one shot phenomenon." (Imai, 1986:23)

7.13 OAK: The Bedrock for Innovation

The author also sees Organise Around Knowledge as the bedrock for innovation. Whilst accepting innovation can be about novelty and the development of radically new ideas it can also be about the simple, incremental development of what is already there and about making a difference to a particular situation which, within the innovation literature is described as the difference between radical and incremental innovation (Bessant et al, 2005). Womack et al. (1991) argue that the Japanese car manufacturing industry has been successful due to a sustained, forty year programme of systematic and continuous improvement of both product and process design. Bessant (2003:3) makes the point that "we confuse 'invention' – coming up with a bright idea – with 'innovation' – the whole process of taking that idea into successful implementation and use." He believes most innovation falls into patterns of occasional breakthroughs followed by long periods of continuous improvement and cites 3M's, Corning Glass, Philips and General Electric as companies who are successful at managing this process. Gundling (2000) also argues that not only do companies need the ability to manage innovation in product development they also need to be able to create and refine the process underpinning those products.

7.14 Summary of the OAK Methodology

The Ten Step OAK Methodology begins with the creation of an interrelationship map which is used by senior management to identify value added and non value added activities. A decision is then made about non value added activities: should they be transferred to more appropriate departments within the company or should work on them stop? Once this has been decided the interrelationships map should be transfigured and the department re-organised around the knowledge which is crucial

to the business. Senior management should then prioritise the order in which the
knowledge maps should be created. The responsibility for completing each of the ten
steps, with a description of the activity, objective and deliverable is shown in Table
7.2.

Step	Activity	Objective	Deliverable	Responsibility
1	Identify all activities & distinguish between value added and non value added and link related activities.	Identify and distinguish between value added and non value added activities and agree with managers.	Inter-relationship Map.	• Section member • Kaizen pilot • Senior • Manager
2	Organise around knowledge.	Transfer non-value activities to other sections or stop doing altogether.	More effective/ efficient organisation.	• Section member • Kaizen pilot • Senior • Manager
3	Prioritise processes for capture.	Declare the processes that need to be tackled first and when	Prioritised list of processes for capture agreed with manager.	• Senior • Manager
4	Capture the process as it is currently performed and transfer, together with timing, onto a knowledge map.	To capture accurate working practices, identify all stakeholders and identify timing.	Knowledge map of current process.	• Section member • Kaizen pilot • Senior
5	Critique/modify the process using previously logged concerns. Level the 'new' knowledge map with manager.	Capture any concerns with the current working process. Highlight problem areas on the knowledge map. Propose countermeasures for concerns.	New levelled knowledge map.	• Section member • Kaizen pilot • Senior • Manager
6	Identify key performance indicators.	To enable managers to monitor performance against knowledge map.	Effective key performance indicators.	• Senior • Manager
7	Identify skills and tools needed to do tasks/jobs.	To use as part of Skills matrix.	Skills matrix.	• Section member • Kaizen pilot • Senior
8	Level the process with all stakeholders. Modify where necessary.	To obtain buy into the process from all stakeholders.	Validated knowledge Map for publishing on portal.	• Senior • Manager
9	Train staff.	Develop staff capability skills.	A capable workforce.	• Section member • Senior
10	Validate Training.	Group effectiveness of training and learning.	Quantitative method of validating improvements on capability and efficiency.	• Manager

Table 7.2: The Ten Step OAK Methodology.

7.15 The Directors' Response

The Directors' response to the presentation of Design Reviews was to appoint a manager responsible for Quality and to set a standard for the Design Review Process. During the meeting NTCE's Managing Director described OAK as a "good strategy" and although the Directors seemingly agreed they stopped short of agreeing to implement the methodology. Again the author was left without a sponsor for the work. From experience, it is always easier to get the support of European Directors for projects they consider to offer a substantial return on investment than it is to get them to talk about realigning and improving existing processes. It is indicative of a self promoting individualistic culture (Hofstede, 2001; Trompnaars and Hampden-Turner, 2003) Talk about process, however takes time and effort and requires substantial management commitment. OAK means investing in people. Help came from an unexpected quarter in the form of his line Director who was plagued with problems of his own yet agreed to pilot the methodology in his own department (Product Development Support). At that time he admitted to not being a convert of the OAK methodology but said he recognised something in what the author was saying after continuously being faced with responding to reactive management.

7.16 Conclusion

This chapter has described the background and philosophical underpinnings of the Organise Around Knowledge Methodology. In this chapter the author learned that if he was to be successful in knowledge management he had to take into account the power and politics within the organisation and adjust his strategies to suit. There is a great resistance to change and the decision as to what made a strategy practical depended entirely on the viewpoint and personal agenda of who was making the judgement. The chapter also highlighted that there are different cultural approaches to learning and strongly affects patterns of learning. In NTC the emphasis is on the job training whereby engineers are expected to submit to authority and the constant request for reflection and learning leads to deeper levels of understanding through the socialisation of shared experiences and mental models. It is only through submission that engineers are included in the networks and are able learn which in itself reinforces the strength of the collective. This chapter also introduced the philosophy

underpinning the OAK strategy and methodology and the concept of the cultural lattice. This chapter has made the following theoretical and practical contributions to knowledge.

7.16.1 Theoretical Contributions to Knowledge

- Knowledge Management initiatives have to be practical.

- Japanese Managers in NTC do not see the need for processes because it is all captured "in the minds of the engineers."

- In the West "offered" is often a euphemism for "told" but that is not always the case in NTC. The word of NTC General Managers is sacrosanct. These are all powerful people who are charged with delivery and how they manage their resource is their prerogative which leads to inefficiencies due to lack of standardisation.

- Nissan Technical Centre Japan relies heavily on on the job training (OJT) to ensure quality of design and Japanese seniors and managers take the responsibility of training their staff upon themselves.

- In NTC, there is no standard process for Design Reviews; engineers learn what is acceptable from their seniors and managers through ojt (on the job training). The social processes of holding a design review, manifest themselves externally first and then act as a conduit for knowledge sharing and creation and are internalised through a transformational process. During socialisation, individuals share experiences and develop common mental models.

- Generally, NTCE (British) engineers tend to want to be sent on training courses and to collect the associated certificate of attendance and learning. British managers and seniors also expect the company to provide the necessary level of tuition.

- The Japanese approach to learning and more especially, the associated self-discipline does not necessarily apply outside of NTC.

- On the job training is a culture whereby engineers are expected to submit to authority.

- Nissan Global Culture is the amalgamation of cultures from multiple organisations, scattered across the globe which are unified by a common vision and harnessed by objectives.

- Cultural change is dynamic and cannot be controlled, however by studying culture organisations can learn to accept, appreciate and understand the reasons for the differences and identify interventions which may assist in helping culture develop in a particular way, minimising the dysfunctional elements but making the most of the cultural strengths that each company brings to global Nissan.

- Efficiency, sustainability and the beginnings of a knowledge based learning culture can be realised by organising around knowledge

- Knowledge Management is like any other function within Nissan, it is about deliverables and Knowledge Maps are the frameworks for developing the necessary cultural mindsets to deliver company objectives.

- NTC and NTCE Directors set the direction, rather than dictate the direction for the company. They expect others to follow but it is not mandatory and providing managers deliver, they can decide how things are done.

- The way Nissan employees relate to each other is a key to the success of the company. Knowledge is articulated in relationships, so any relationship is about shared knowledge. Relationships enable the making of meaningful connections and sustainability is pursued through the creation of the necessary cultural frameworks to manage those relationships - clarifying, codifying and mediating expected cultural mindsets.

- The key to sustainability and implementation is in recognising and managing within the cultural constraints of the company

- Nissan has been built around people and not process and that for any initiative to succeed or even be launched within the company it needs a strong sponsor.

7.16.2 Practical Contributions to Knowledge

It would be useful for researchers and practitioners to

- Understand the cultural expectations of training in any given organisational setting when making and implementing training and learning strategies

The next Chapter presents the pilot study for Organising Around Knowledge in Product Development Support.

Chapter Eight

Phase One: Pilot To Organise Around Knowledge

8.0 Introduction

This Chapter presents Phase One of the Pilot to Organise Around Knowledge (OAK) in the Product Development Support Department (PDS) at Nissan Technical Centre Europe. It begins with a short description of the purpose, structure and composition of the department and then outlines the emerging and changing research structure and methodology which is shown in the form of a flow diagram and then discusses and presents a summary of the results of the pilot activity. The Chapter concludes with a detailed description of the revised OAK Methodology.
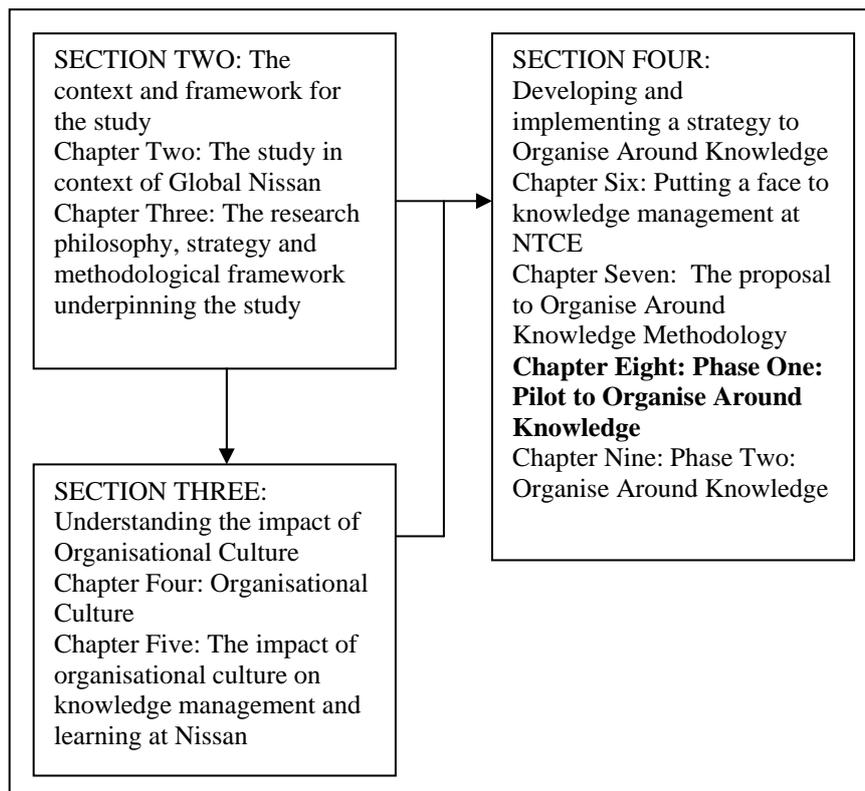
8.1   Product Development Support Organisational Structure

The purpose of Product Development Support (PDS) is to support NTCE (Appendix 6) through all stages of vehicle design and development and life-cycle management. PDS is organised into six functional departments, each with a different remit (Figure 8.1) and is staffed by ninety nine people, the majority being permanently employed British males (Tables 8.1 and 8.2).

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                        ┌────────────────────────────┐
                        │         Director           │
                        │          (VY0)             │
                        │ Product Development Support │
                        │           UK               │
                        └────────────────────────────┘

  ┌──────────────┐   ┌─────────────────────┐   ┌─────────────────────┐
  │   Manager    │   │      Manager        │   │      Manager        │
  │    (VYZ)     │   │       (VYP)         │   │       (VYR)         │
  │ Homologation │   │ Knowledge Management│   │ Trial parts/vehicle │
  │     UK       │   │      & Audit        │   │    Management       │
  │              │   │        UK           │   │        UK           │
  └──────────────┘   └─────────────────────┘   └─────────────────────┘

  ┌──────────────────────────┐  ┌──────────────────┐  ┌──────────────────────────┐
  │        Manager           │  │    Manager       │  │        Manager           │
  │         (VYQ)            │  │     (VYS)        │  │         (VYX)           │
  │ Engineering Administration│  │ Trial Vehicle Build│  │ Digital Process Promotion│
  │   & Data Validation      │  │   Engineering    │  │          UK              │
  │       UK & Spain         │  │     Spain        │  │                          │
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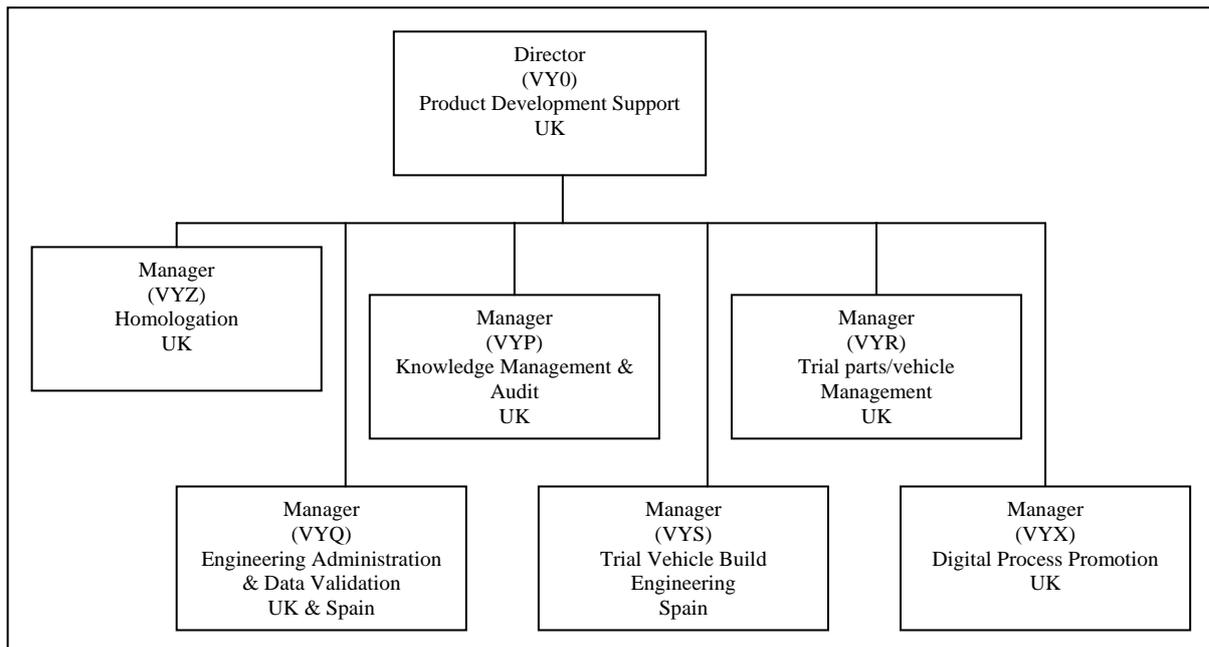
Figure 8.1: PDS Organisational Chart and Department codes VY0 etc.

8.1.1 Engineering Administration and Data Validation

Engineering Administration has four main roles: specification management, administration of engineering documents, co-ordination of the Design Support Team (DST) and control of the exchange of design data between NTCE and its supplier base. The Engineering Administration and Data Validation section has offices in the UK (Cranfield) and Spain (Barcelona and Madrid).

8.1.2 Trial Parts & Vehicle Management

This section is responsible for sourcing and procuring trial parts to support the first physical trial build. It also manages the material budget of each vehicle programme.

Trial Parts and Vehicle Management is based in the UK (Cranfield) and Spain (Barcelona).

8.1.3 Trial Vehicle Build Engineering

Vehicle Build Engineering is responsible for the first physical trial build, known as S-Lot (Simultaneous Lot) but also for Digital Mock-up Design Reviews (DMDRs) held at each of the four digital build phases. They also manage the closure of concerns raised during these builds. The Trial Vehicle Build Engineering Section is based in Spain (Barcelona and Madrid and Cranfield).

8.1.4 Digital Promotion Office

This section is charged with the task of educating NTCE Design Engineers in the best use of the digital design facilities available to them, including I-DEAS (CAD Generation) and Space-Vision (CAD Validation). It is also responsible for introducing Value-Up Innovation of Product, Process and Programmes (V3P) and methodologies into NTCE. The Digital Promotion Office is based in the UK (Cranfield).

8.1.5 Homologation

Homologation are responsible for working with the Design and Test departments to ensure that the vehicles developed at NTCE have the necessary certification required to enable them to be legally sold in the destination markets. The Homologation Section is based in the UK (Cranfield).

8.1.6 Knowledge Management and Audit Section

The aim of Knowledge Management and Audit section is to reduce the Design and Development resources required to develop Case III projects, where NTCE take full responsibility for the upper body freeing up resources to develop higher-value products and technologies. The section aims to facilitate this by supporting NTCE in making full use of the knowledge and experience it possesses. The Knowledge Management and Audit section is based in the UK (Cranfield).

Section	Director	Managers	Seniors	Engineers/ Controllers	Admin Officers	Admin Assistants	Totals
Homologation		1	1	5	1		8
Trial Parts & Vehicle Management		1	2	14	3	1	21
Engineering Administration	1	1	3	18	4	2	28
Digital Promotion Office		1	2	10	3		16
Knowledge Management & Data Validation		1	1	6			8
Trial Vehicle Build Engineering		1	3	11	2		17
						Department Total	99

Table 8.1: Product Development Support Breakdown (as of August 2005)

Total Staff	Nationality	Gender	Contract Type & Number of Staff
99	British 70 (71%)	Male 67 (68%)	Permanent Contract 74 (75%)
	Spanish 28 (28%)		
	Japanese 1 (1%)	Female 32 (32%)	Temporary Contract 25 (25%)

Table 8.2: Product Development Support Composition

8.2 Phase One: Product Development Support Pilot Activity

The Director of Product Development Support kicked off the pilot activity in his department in Cranfield in August 2004 and followed up with presentations in Barcelona and Madrid in the following month. He sated that if the pilot was successful it would be rolled out across the rest of the company and stressed the importance of capturing the processes to improve efficiency and pledged his support and that of his management team to the activity. In line with the Managing Director's request for "bottom up" thinking each section was asked for volunteers to act as Organise Around Knowledge Kaizen Pilots, who would lead the sectional activities, supported by the Knowledge Management Section. Some of the pilots volunteered willingly, others were coerced. After an initial flurry of excitement, interest waned and meeting attendance dropped, especially in those meetings led by uninterested pilots. The promised support of the management team was not evident. They said people were "too busy doing the actual job" to attend meetings; besides "they had already mapped their processes." The author initiated an audit and proved this was not the case: Thirty two processes were reported to be up to date, twenty nine required

updating and forty six new processes were required (Figure 8.2). However, these figures are misleading because when pressed, copies of the thirty two processes said to be up to date failed to (and have still failed to) materialise and should rightly be re-categorised as needing updating.
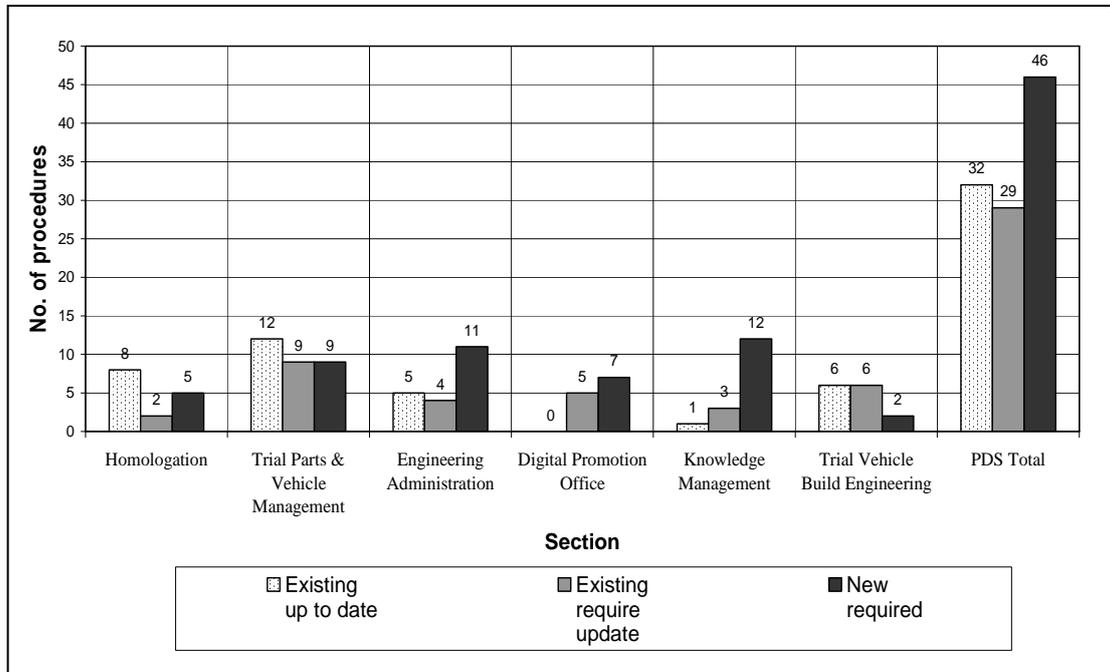
Figure 8.2: Results of PDS Process Audit

The Director's countermeasure for the section's saying they did not have the time was to dedicate every Tuesday morning to the OAK Kaizen activity. Reasons for not attending meetings had to be sanctioned by the section manager. Initially, to show his support and encourage participation the Director "walked the talk" and attended group meetings to see what was happening and hear feedback

8.3 Phase One: Research Structure

Once the activity was kicked off the author, and a member of his section interviewed people at different levels within PDS about the OAK pilot. A second interviewer was necessary because some respondents said they felt uncomfortable talking openly to the author who was a manager in the company.
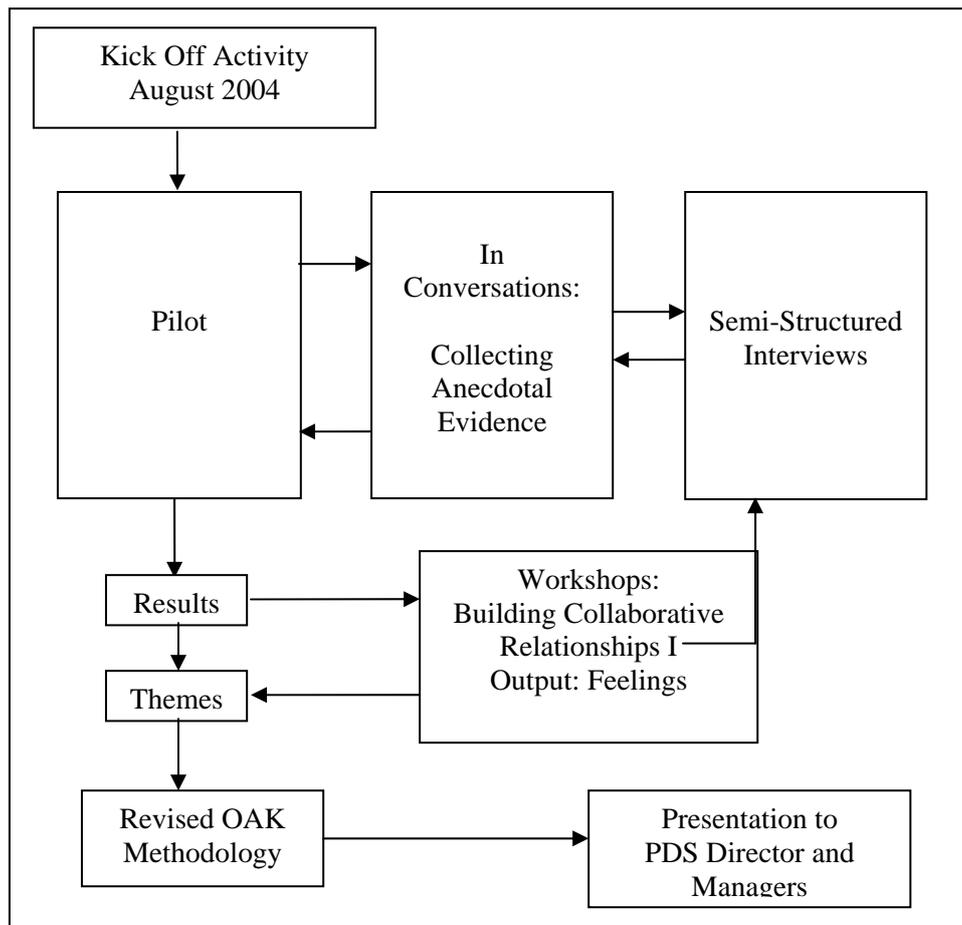
Figure 8.3: Phase One: Research Structure

The interviews were semi-structured and based on the initial findings of the pilot and also on anecdotal evidence about working in Nissan that the author had gleaned from conversations with colleagues. These anecdotes have been used throughout this thesis to support arguments or illustrate points of view. The research structure shown in Figure 8.3 is presented as a guide to the rest of the chapter. It was made after the event, and puts the research into a logical sequence of events with deliberate and measurable outcomes. In reality the research structure was not planned, and could not be planned in a predictive manner rather it evolved over the course of the study, with one step tentatively leading into the next. Sometimes those steps were backward steps, it was a sense making process, constantly revisiting and re- interrogating data.

8.4 Summary of Results of PDS OAK Kaizen Activity

The findings of the OAK Kaizen Pilot Activity are summarised and shown below as "Findings," "Lessons Learned" and suggested "Actions." The "Findings" are paraphrased statements taken from the interviews and from discussions with people in PDS. The "Lessons Learned" and "Actions" were discussed with the PDS management team and staff and used to develop and revise the OAK Methodology. The findings have been numbered 1-30 and are referenced later in the Chapter (Section 8.8) to give the background and reasons as to how and why the author developed and revised the OAK Methodology.

No	FINDINGS	LESSON	ACTION
1	Some staff members have different agendas and will undermine the activity if allowed to do so. Some people supported the activity, some were resistant to change and some were indifferent.	The OAK methodology is not sustainable without strong leadership.	Ensure Director support and active, determined leadership
2	Staff need platforms to promote themselves and express their anxieties and will jeopardise the actvity	Accept the need.	Design and allow for formal and informal meetings for groups and individuals.
3	PDS Cranfield operate in an individualistic culture	Accept this as fact	Design the methodology to make the best of an individualistic culture.
4	Some staff use lack of direction as an excuse for not delivering.	People need clearly defined objectives and deliverables and delivery against time. Objectives need to be clearly managed.	Clarify objectives and deliverables and manage against the timing.

No	FINDINGS	LESSON	ACTION
5	Business processes are not integrated. [	Processes need to be linked to form a business and R&D infrastructure. Isolated processes, however well codified are ineffective	Use OAK Methodology to create infrastructure.
6	Managing at a higher level sometimes means we only understand the business at a superficial level. "There is a danger of throwing the baby out with the bath water."	Need to understand the background so that informed decisions can be made.	Debate and test the level of understanding.
7	Past company initiatives were reactive strategies and driven by individuals rather than mid/long term strategic intent.	People welcome change only when they see or have felt the need for change.	Develop strategic leadership
8	Inexperienced managers are not able to validate processes	Managers need to understand the business. PDS needs Subject Matter Experts in every area of its business. Regularly moving managers is counter productive.	Promote/Recruit Managers who know the Business. Identify and develop Subject Matter Experts
9	Staff map what they think they should be doing and not what they are actually doing	Do not take it for granted that people are doing what they say they are doing.	Manage the process. Make it central to the operations. Constantly check and look for improvements and address concerns.
10	PDS Managers/Seniors believed, and argued, that the processes were in place. This proved to be a false assumption. Company processes/ infrastructure were not in place	Do not assume anything. These beliefs are rooted in the past. It is a myth to say PDS (the company) has too many procedures.	Ask to see the process. Check it is up to date. Check it is applied. Practice Shangenshuji. (Understand what is really happening. See it for yourself. Check out the process).
11	Staff members deliver at all costs.	Staff have different modus operandi which are not necessarily aligned to business efficiency. Without discipline staff will work away from process.	Mandate a standard way of working. Mandate the use of processes/knowledge maps and procedures
12	Staff are reluctant to collaborate and share knowledge.	Frameworks are needed to encourage the transfer of knowledge.	Identify and develop the necessary frameworks (Explicit and tacit knowledge).
13	Staff "hide" things. Whether unconsciously or consciously is up for debate	Independent audits of process/procedures are needed. Do not underestimate the importance of audits.	Develop a robust audit procedure. Audit regularly.
14	Difference in opinion about roles and responsibilities at all levels: Director/Manager/ Senior/Engineer/Controller.	Do not assume people know or understand their roles and responsibilities	Mandate the use of the role/responsibility matrix.

No	FINDINGS	LESSON	ACTION
15	Some staff members are intransigent about the necessity of change. They identify and value themselves with old ways of doing things.	Do not expect everyone to immediately buy into the process of organising around knowledge. Accept that some people will use the methodology to promote self interests.	Develop a strategic and determined style of leadership.
16	The style of management is predominately reactive	Need to emphasis and promote the importance of proactive management.	Make time for structured discussion using the tools and templates from the OAK methodology
17	PDS has a "tick box" culture of delivery.	Ticking the box does not always equate with efficiency and effectiveness.	Check the detail.
18	Words/labels have strong associations. For some, the use of the word "Kaizen" meant reactive problem solving	Be careful of the words used to "sell" the message. It can be counter productive.	Choose words carefully
19	Staff believe PDS has a blame culture. They do not like following processes and are reluctant to identify Key Performance Indicators (KPIs) because they are worried they will be used against them.	Blame cultures are not conducive to the OAK methodology. Organisational efficiency depends on a leadership that allows for the design, development and implementation/management of culturally sensitive frameworks/structures/mindsets which are focused on the business.	Need to be firm but fair. Develop the appropriate leadership styles and relevant frameworks.
20	Staff do not readily accept criticism, however constructive. They take it personally.	Talking around codified processes/knowledge Maps focuses the discussion. Without the processes/maps the conversation tends to wander. What usually happens is that staff discuss their hidden agendas, which are usually about self.	To counterbalance "focusing" only on processes/maps the Director/ Managers/Seniors should have informal discussions with their staff where other issues can be aired.
21	Past mistakes are often repeated. We reinvent the wheel.	Lessons are not learnt. Staff are reluctant to update sectional concerns and opportunity logs. It is a fallacy to believe that they will remember what happened and complete the log at the end of the project.	Mandate the use of the Concerns and Opportunity Logs. Use these logs to update the processes and knowledge maps
22	Focus is on Key Performance Indicators/Output	Manage the process and not the output	Cultural changes: Manage the process and not the output
23	Staff will shirk responsibilities/ blame others if responsibilities are not clear	Ensure responsibilities are clear	Ensure every process/knowledge maps has an owner

No	FINDINGS	LESSON	ACTION
24	Some knowledge Maps do not contain enough information for the job to be done without reference to an expert	Some knowledge map needs a procedure, outlining the map and a job instruction sheet. Use Knowledge Maps to focus discussion.	Write Procedures and Job instructions where necessity has been agreed.
25	Staff do not readily refer to Processes/Knowledge Maps and they quickly become irrelevant.	It is important to keep the processes/maps "alive." Knowledge promotion is key to sustainability	Develop strategies for knowledge promotion
26	PDS (the company) have relied on individuals/personalities to inform them of "the way things are done around here." The message is inconsistent and sometimes confusing.	Use polices, procedures and knowledge maps to structure the company culture	Mandate the use of polices, procedures and knowledge maps
27	Over emphasising the use of process negates the importance of knowledge.	Use of the term "Knowledge Maps" shifts the focus from process to people.	Promote use of the term "Knowledge Maps"
28	Skills matrices are task-based not knowledge-based. They are not linked to the knowledge maps.	It is in the continuous improvement of people, and the relevant OAK frameworks that knowledge will be built/captured and shared.	Rewrite the skills matrices around knowledge maps and continuously appraise staff. Need to set attainment of knowledge and judge against that standard.
29	Knowledge Maps were not levelled with stakeholders	Knowledge Maps seen as a tick box exercise. Staff believed the initiative would fade away.	Promote Knowledge
30	Often staff were not aware of how their jobs contributed to the delivery of the product.	Knowledge Maps must be linked to the Generic Master schedule.	Link Knowledge Maps to Generic Master Schedule.

Table 8.3: Findings of the OAK Kaizen Pilot Activity

8.5 Building Collaborative Relationship Workshops I

Blame cultures are not conducive to the collaboration necessary for the transfer and sharing of knowledge (Storck and Hill, 2000) and in this case, the successful implementation of the OAK Methodology. PDS Directors, Managers and Seniors talk about trusting their staff but many were concerned that their opinions about OAK would be misconstrued.

"I actually think OAK is a good thing. It has got a lot of things going for it but not everyone is telling you as it is. Sometimes they say things half in joke – I've heard

them - but they mean it really. Deep down they mean it. Or they'll tell you what they really feel but then say: "Don't put my name to it!" I don't want that used against me! They are worried about repercussions. People here have long memories." NTCE British Controller

Clegg and Hardy (1996) warn that often the rhetoric of trust and collaboration masques an organisational reality of manipulation, capitulation and aggressive self-interest but without trust, knowledge initiatives will fail, regardless of how thoroughly they are supported by technology and rhetoric. However, learning to trust is a complex emotional process, it is not something that is simply present or absent from a social relationship but is negotiable and contextually, structurally specific and one that shapes and sustains relationships and organisations. The author surmised that for the Maps to work people have to behave and feel in a certain way (Figure 8.4) and devised and held a series of workshops to determine how people would like to feel and the associated behaviours necessary for the effective implementation of Knowledge Maps.
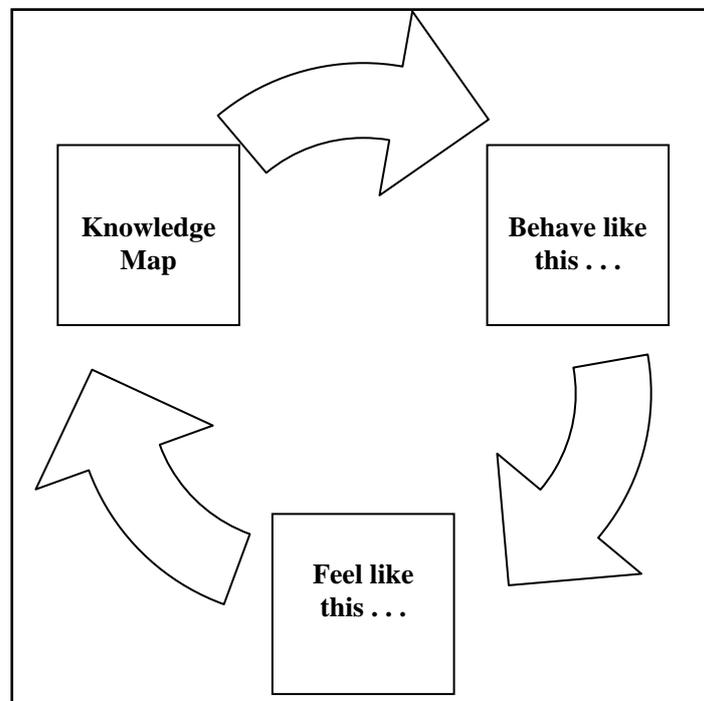
Figure 8.4: Managing the Knowledge Maps

There were 7 workshops involving 54 people (Table 8.4). The workshops were group exercises, the participants were asked first, what behaviours they would need to

exhibit to successfully implement the OAK Methodology and work with the Knowledge Maps and then asked how they would like to feel when exhibiting those behaviours.

Workshop	Section	Location	Number of Participants
1	Knowledge Management & Audit (VYP)	UK/Cranfield	6
2	Engineering Admin & Data Validation (VYQ)	UK/Cranfield	8
3	Trial Parts & Vehicle Management (VYR)	UK/Cranfield	9
4	Trial Vehicle Build Engineering (VYS)	Spain/Barcelona	10
5	Engineering Admin & Data Validation (VYQ)	Spain/Madrid	8
6	Homologation (VYZ)	UK/Cranfield	7
7	NTCE Japanese Senior Engineers	UK/Cranfield	6

Table 8.4: Building Collaborative Relationships Workshops I

The participants were asked to record both sets of answers on post-its. The post-its were then consensually grouped and the behaviours and corresponding feelings were linked together. Group 1 shown on Figure 8.5 (taken from a workshop held in Madrid) shows how desired behaviours exhibiting professionalism etc. were linked to feelings of confidence, safety and motivation. The author accepts that some of the post-its under the Behaviour banner are not behaviours but a pre-requisite necessary for the behaviour to be exhibited.
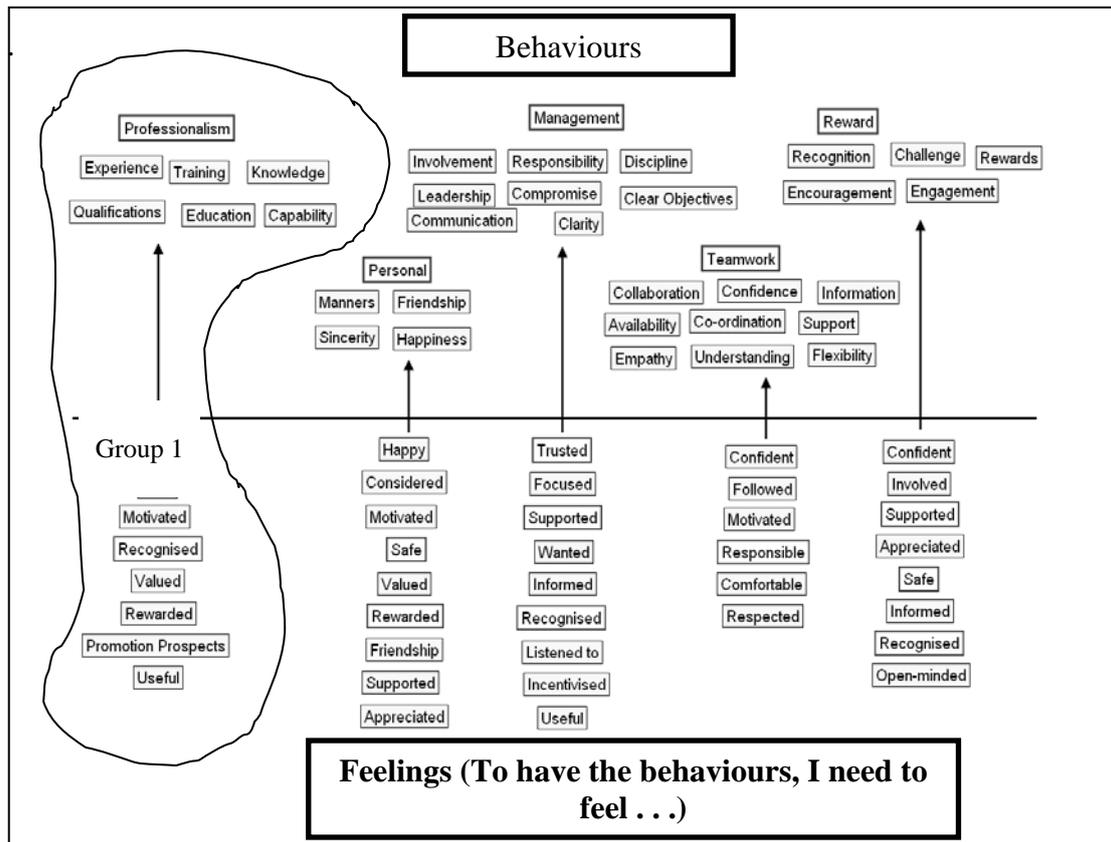
Figure 8.5: Building Collaborative Workshops I – Example taken from
Engineering Administration and Data Validation Group Madrid (VYQ)

From the workshops the author concluded that in order to display the behaviours necessary to make the knowledge maps work and Organise Around Knowledge, PDS staff need affirmative: Recognition, Respect, Reward, Trust, Support, Safety and Relationships but it also became apparent through many discussions that these words were culturally mediated, in that they meant different things to different cultures (Table 8.5).

Emotions	UK (Cranfield - British)	Spain (Barcelona)	Spain (Madrid)	UK (Cranfield – Japanese)
Recognition	As individual	As a member of a professional group	As a family / team	- Recognising others - Praising others - Not about self
Respect	As individual	As a member of a professional group	As a family / team	For others
Reward	For self	Expect to be remunerated as professional employees, as a group	Expect manager to reward fairly. Caring organisation.	Natural fairness assumed.
Trust	Bounded trust. Written records important.	Trust in professionalism as group	Team trust manager	Trust taken for granted.
Support	Negotiated support	Support as professional group	Support as family	Support of company
Safety	From individual criticism	Safety against external criticism	Safety as extended family	Safety within company
Relationships	Emphasis on work/formal relationships	Professional relationships	Family support 'paddle tennis'	Informal & formal relationship given equal recognition

Table 8.5: Organise Around Knowledge – How emotions mean different things to different cultures.

British staff based in Cranfield want to be recognised, respected and rewarded as individuals. It is all about them and their careers. There is an element of fear, they do not like being criticised and trust is bounded and written records are important to protect and justify individual actions. The emphasis is on formal work relationships and support is negotiated in that they are continually "watching their backs." Trompenaars and Hampden- Turner (2003) report in individualistic cultures, organisations are seen as serving the needs of individual owners, employers, customers and employees enter relationships because it is in their individual interests to do so. The organisation is about serving self and they co-operate only because they have a vested interest. Each expects to be individually reward for his effort and knowledge is used to make the organisations work effectively.

The Spanish living in Barcelona build their identities and value themselves as professionals offering their services to the company. They take pride in their positions

within the company and within society. These people react strongly if they feel their professionalism is being threatened. Lewis (1999) warns that you must never, under any circumstances say anything that might offend Spaniard's sense of personal honour or dignity, which the author found out to his cost. One of the people from Barcelona took umbrage when the author interviewed her about her job. She did not tell the author directly but confided in a British colleague who later informed the author.

"You really upset her. She wanted to know why you were asking her questions. She thought you were questioning her ability and that you thought she didn't know what she was doing." NTCE British Controller

The same can be said for the Spanish from Madrid, although the impression was that they were not as easily affronted as their compatriots in Barcelona. The Spanish accepted autocratic management styles but it manifested itself differently in Barcelona and Madrid. Although both were paternal, the Manager in Barcelona was firmer and less friendly than his counterpart in Madrid. The Director of Product Development Support described the Manager in Barcelona as being the "more professional of the two." The people in Madrid see Nissan as a caring organisation and they feel they work together well, as a team. In many ways they treat the company like an extended family with weekly get togethers to play "paddle tennis." Likewise, the Japanese assume the company will treat them fairly and given them the opportunities they need to progress. Trust is taken for granted; everyone has a place, and knows their place in the company and within society. When talking about recognition and respect, it is always for others and not about "self." It could be argued that in talking about others, others are talking about them and it is part of the reciprocity of Japanese relationships. The results of the study point to the British favouring individualistic organisational cultures while the Spanish and Japanese prefer a more communitarian organisational culture. Two dimensions for classifying societies, which have already been introduced (Chapter 4: 72) are "power distance" and "individualism versus collectivism" (Hofstede, 1991). Power distance is the degree to which subordinates accept inequality in their relationships to people in authority, which may influence the managerial styles of those power. Using Hofstede's scale, Spain (57) and Japan (54) display a relatively high power distance which would indicate they would accept a

more autocratic style of management whilst Britain (35) has a lower power distance. Individualism versus collectivism, measures the strength of individual ties within society. Britain (89) said to be very individualistic in comparison with Spain (51) and Japan (46) which are more communal. In communitarian cultures organisations are seen in a social context which gives its members a sense of meaning and purpose and organisations are often likened to a large family, community or clan which develops and nurtures its members.

The author re-examined the twenty two interviews he had made with people involved in the pilot and found it was possible to use the same emotional headings and findings of the Building Collaborative Workshops (I) to categorize and understand the underpinning sentiments of what was actually being said (Figure 8.6).

Figure 8.6: Extract from One of the Interviews with the Text Highlighted and Categorized with the Emotional Headings from Building Collaborative Workshops I

These feelings are not only what Product Development Support staff need from their management team but they are also what everyone needs to develop and flourish as human beings. These findings are supported by a study made by Griffin and Tyrrell (2004) who coined the term "human givens" to describe a human being's physical and emotional needs.

8.6 Themes from OAK Kaizen Pilot

Overall, the OAK Kaizen Methodology has shown that Product Development Support is not fully in control of its business and the department lacks direction. This charge is aimed at all manager and supervisory levels: Director, Manager, Senior, Engineer and Controller and is endemic of the organisational culture. The way they manage their business is reactive and piecemeal; processes are unclear, out of date or non-existence and there is a difference of opinion about roles and responsibilities at all levels. The Company has relied on individuals to drive it forwards and is not learning from past mistakes. There is a blame culture and past change programmes have failed to become embedded leaving the workforce cynical about any new initiative resulting in resistance to change. These organisational mindsets have been allowed to develop over the years and are contrary to the efficient running of the department. The people involved in the OAK Kaizen Activity broadly wavered between five groupings, depending upon their viewpoint at any given time. The groups are:

8.6.1 Sponsors

The over-riding sponsor for this activity and for Knowledge Management in general, is NTCE's Managing Director. His four year tenure is nearly over and he is preparing his legacy for his successor; he is well aware of the importance NTC is putting on capturing and sharing knowledge and wants to put something similar in place at NTCE. Rather than blindly follow what Nissan Technical Centre Japan has to offer he wants NTCE to complement their activity with something appropriate to its own organisational culture. He has charged NTCE's Knowledge Management section with designing an infrastructure for organisational learning within the company. It is sense of pride, of a job well done and is honouring his responsibilities as Managing Director.

The Director of Product Development Support is also a sponsor but because of the disjointed efforts of his management team he has had to take on the role of driver. The MD and the Director of PDS acted as "Champions" (Clarke and Pratt, 1985) and defended and supported the OAK Kaizen Activity from the beginning. They are also, what Strebel (1996) referred to as change agents, using their voice to break the dominant culture of resistance, starting with top management.

8.6.2 Drivers

Drivers see OAK Kaizen as fundamental to the success of the business and to their own careers or other self interests and in effect these people acted as "Tank Commanders" (Clarke and Pratt, 1985). Generally, there is the perception that OAK Kaizen is yet another management fad or flavour of the month that will soon be forgotten. As yet, that has not happened as the Director of Product Development Support values the activity because it gives him a transparent management framework and the confidence to challenge and direct. However, the department feel his initial support has waned, promises of weekly "walkabouts" and review meetings have not been kept. OAK Kaizen supporters accept that the Director is busy but believe that if the activity really is a priority it must be treated as such and he should "walk the talk" (Taylor, 2005). The author obviously sees himself as a "Driver." The methodology is his "brain child" And he believes fervently that it will work. He wants to make a difference and have the opportunity to influence and work with the people who shape the company. He also wants to develop his career as an expert in knowledge management, organisational learning and change management. People in his section share the same sentiment. They believe they have something to offer and want to develop their careers in knowledge management. The driving factor here is that the section has to demonstrate its value otherwise it will follow the pattern of previous fledgling sections which have failed to deliver and been disbanded.

8.6.3 Supporters

Supporters value OAK Kaizen because they see how potentially it could help them manage their business or careers. It is a shield to hide behind, giving them the

opportunity to promote themselves and show how they would manage the job if left to their own devices. Although OAK Kaizen supporters recognise how it could help them and the department they are confused by mixed messages: Not everyone is involved and there is a perceived lack of management support. The vision for PDS and OAK Kaizen is unclear at a working level and the danger is that cynicism sets in and rots their enthusiasm. They are also scathing of the fact that people are not reprimanded for not supporting the activity.

8.6.4 Detractors

The main detractors are those people who feel threatened by the activity because it is seen to undermine their authority or way of life they find comfortable. Initially some managers and seniors claimed they understood the business and had the necessary processes in place. This has now been discredited and the argument against OAK Kaizen has shifted from being "a theoretical waste of time" to "important but the job must come first." The inference is that OAK Kaizen can be side tracked to a time when work pressures have lessened and people have the time to think. This viewpoint perpetuates an organisational culture of reactivity. The Managers and Seniors do not always work together as a team because if a lack of common agreement of roles and responsibilities. They have intransigent views about how the company operates and are difficult to manage and although they work extremely hard, efforts are disjointed and not always complementary towards OAK Kaizen. Other detractors, although initially offering their support withdrew it once they discovered it contradicted their opinions of what they believed Kaizen meant. There is a dislike of structure, imposed processes and standardisation. It smacks of control. Codifying knowledge threatens their positions and futures and their ability to promote themselves. Often you find Managers doing the jobs of seniors and seniors doing the jobs of engineers and controllers. The argument that Kaizen will reduce the stressful feelings of overload and help them manage their business is lost on them. The paradox is that the very people who have not delivered, or who are struggling to deliver, pride themselves on delivery and are psychologically wired to value themselves in being able to manage a crisis.

8.6.5 Indifferent

The fifth group are comprised of people who are indifferent to OAK Kaizen. They see management as being the job of managers: "It's what they are paid for!" They are either not prepared or not comfortable enough to become involved in the activity. What ever the case, indifference in this instance is not necessarily counter productive. It is a fact of life and it is unreasonable to expect everyone to be positive about OAK Kaizen or, indeed see the bigger picture. This group needs to be managed by using the Knowledge Maps and making deliverables and tasks clear.

8.7 Revising the OAK Methodology

Based on the findings presented in Table 8.3 the OAK Methodology (Chapter 7:195-6) evolved from ten steps to three phases and twelve steps, each with a subset of activities (Table 8.11). The three phases are:

No	Phase	Countermeasures
1	Knowledge Strategy	Findings 1-13
2	Knowledge Mapping and Mindsets	Findings 14-18
3	Knowledge Promotion	Findings 19-30

The author also baked the findings from the Workshops: Building Collaborative Relationships (Table 8.3) into the methodology but they are not easily categorised into the three phases, rather they should be considered as a way of working and sustaining the methodology.

8.7.1 Phase One: Knowledge Strategy

The first revision to the methodology was to drop the word "Kaizen," as it inadvertently caused too many problems. It meant different things to different people. One engineer, who used to work in NMUK (Nissan Motors United Kingdom) refused to act as a pilot for the activity saying,

"This isn't Kaizen. It's not the way we used to do it. It's not about management. It's about solving problems as they arise." NTCE Engineer

He was adamant he was correct. Discussions ensued but he was not open to other interpretations: It had to be his way. This in itself is about "control" and a reflection of an individualistic culture and is only one example of intransigent attitudes. Often, people would only accept an opinion or direction if it correlated with their view of the world. On the other hand, Japanese colleagues had no problem in accepting it as a Kaizen activity. They approached it organically, as a group; the British contingent approached it as individuals. To the Director of Product Development Support the word Kaizen meant more than continuous improvement. It meant a commitment to continuous improvement. A commitment to take responsibility and a commitment to deliver as promised. The second change was to the role and need for the OAK pilot. In line with the Managing Director's request, the initial OAK Methodology (Chapter 7: 194) was planned to be a bottom up exercise and led by OAK pilots who were at either engineer or controller level but it soon became apparent that they were unable to deliver the agreed maps. Although supposedly empowered by the Managing Director and the Director of Product Development Support they were not able to authorise change or insist people attended the meetings because their efforts were subsequently blocked by either the seniors or the managers. One PDS British Manager in particular was affronted by not being involved at every stage and complained:

"I cannot abide a process which misses out a line of management. I'll have nothing to do with it." NTCE British Manager

Empowerment is about giving employees the responsibility for decision making and the freedom, autonomy and self-control over their work and has to be allowed to develop over time through a change in beliefs, and attitudes of participants (Pieperi, 1997). An empowered workforce is said to lead to innovation and improved organisational performance (Nixon, 1995) but despite the rhetoric many companies fail to involve employees and it seems for some PDS managers and seniors, their staff are "empowered to do as they are told."

"I'm the organ grinder; they're the monkeys. They do what I tell them to do." NTCE British Senior

Knowledge Strategy comprises of four steps and is the responsibility of the Managers and Seniors. In setting the strategy the Managers and Seniors are agreeing the direction for the section and answering the charge staff had said about a lack of direction.

Step 1.1 Agree Role of Section

At every level there was disagreement about the role of the section. Director, Manager, Senior, Engineer and Controller all had different and often conflicting views about their role in the company which often meant they had their own agendas. In setting up sections, the Directors had assumed that in giving the section a name and broadly explaining the direction, everyone would have the same level of understanding about its role which was not the case. The role of the section emerged given time and the individual aspirations of the people involved. The author's counter measure was to produce a template which asked three key questions and was based on work by Radtke (1998).

1. What is the purpose of the section? (What are the organisational needs or opportunities that the section addresses?)
2. What is the business of the section? (How does the section address these needs?)
3. What are the section's commitments? (When will the section address these needs?)

Role of Trial Build Engineering – VY6

Physical Build

[What] Support top level project planning in respect to physical trial requirements.

[How]
- Provide feedback to PMD about achievability of Project Master Schedules.
- Provide feedback to PMD Planning Paper about feasibility of vehicle assembly timing, location and quantity.

Plan the detailed activity required to deliver Physical Build activities in line with PMD planning papers.

[How]
- Prepare detailed Body/Vehicle assembly plan and maintain NETS accordingly.
- Estimate manpower requirements and confirm that NLH can match requirements.
- Agree physical build job-share with BX6

[When]   In line with timing on Master Schedule

Figure 8.7: Example of Completed Role of Trial Build Engine

The author found that verbal agreements were still open to conjecture and that discussions only became meaningful when the Managers and Seniors actually tried to write down the role of the section. The written word somehow demanded more attention, probably because it was becoming a contract of employment. Some found writing a problem and others wrote long descriptive pieces, which were more about justifying their jobs rather than the role of the section. The template was introduced to shape their thoughts and force a concise writing style that allowed the roles of the sections to be compared and understood. Once agreed and cross checked with both the Departmental and Sectional Strategy and Objectives it was levelled with the Director. In setting and agreeing the role of the section the organisation is not only telling people what they should be doing it is also giving them the respect they need as individuals. Respect is an attitude, or value, that people matter in the sense they are cared about (Addleson, 2000). Figure 8.7 shows how Trial Build Engineering used the template and the questions to define the role of the section.

Step 1.2 Make Inter-relationship Map

In this the Managers and Seniors make an Inter-relationship Map identifying activities undertaken by the section and the processes by which they are managed.

 An Inter-relationship Map shows the customer supplier relationships or how
processes are linked, arrows are drawn from each process to all the other processes
with which it impacts (Figure 8.8). Interrelationship Maps are useful for quickly
identifying where a change to one process may affect another and to distinguishes the
predominant processes within a section; although the Maps are most often used to
show the "big picture view" they portray how the major functions of the business
interact and can be drawn for any level of the organisation (Damelio, 1996). Once the
Inter-relationship Map is made, the Manager and Senior use the Role of the Section as
a qualifying statement to identify value added and non value added processes and
activities undertaken by the section. They ask themselves a very simple question: "If
this is the role of the section should we be doing this work? From the exercise in
Product Development Support, the answers fell into three categories:

- Adds value to the section
- Adds value to the company but not the section/department.
- Has no value to the section or the company.
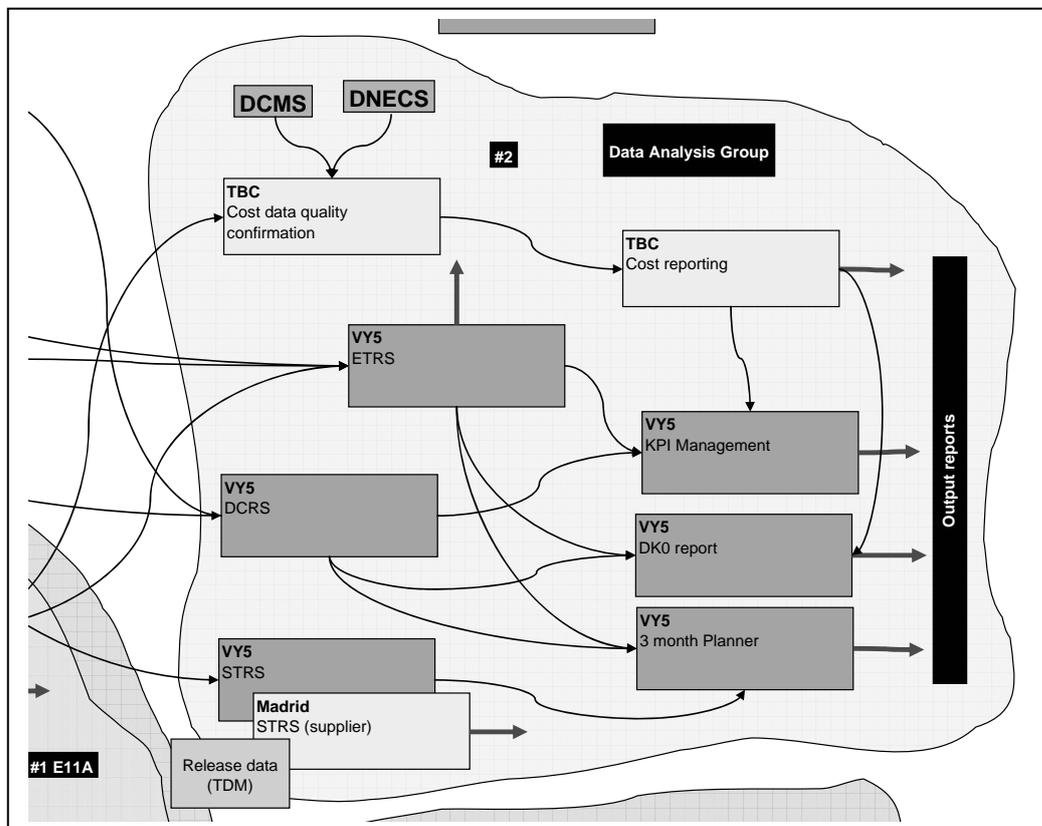
Figure 8.8: Extract from PDS Inter-relationship Map

At departmental level 14 % of process were said not to add value (Figure 8.9) these were transferred to the most relevant departments, or discussions were opened with the heads of those departments: getting them to accept responsibility for those processes was not always easy. At section level, decisions were made as to whether to stop the activity or transfer it to other sections within Product Development Support.
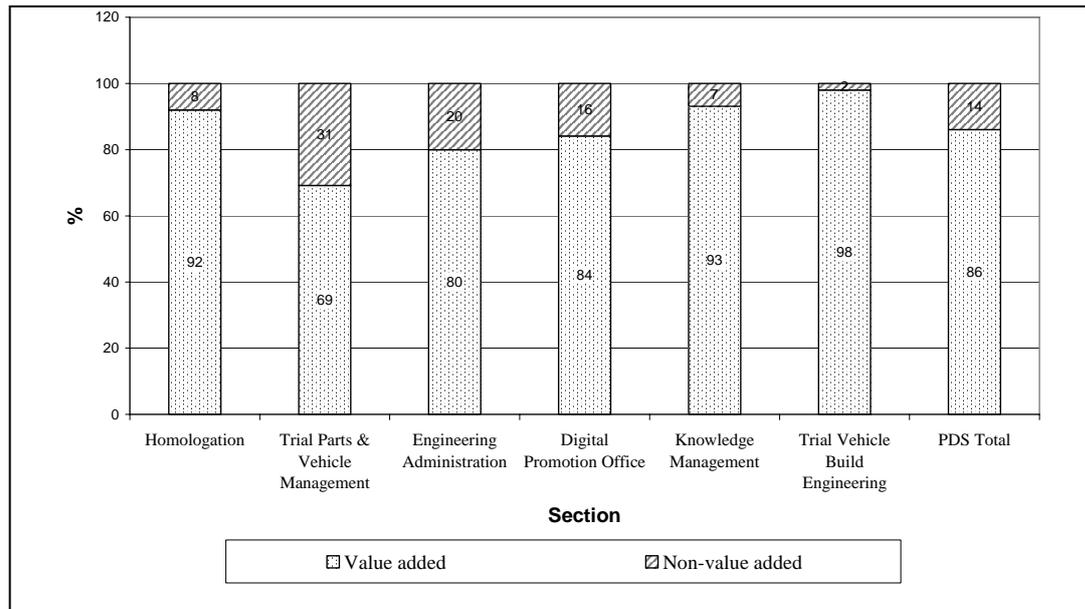
Figure 8.9: PDS Value Added/Non Value Activities

Step 1.3 Organise Around Knowledge

Once the department or section is stripped of non-value added jobs it is time to focus on objectives and deliverables and reorganise around the knowledge that is crucial to the success of the business. Each Manager was given a list of processes he was responsible for and he in turn, delegated that responsibility and the appropriate processes to his Seniors or Controllers. The difficulty here came not in agreeing objectives or deliverables but in the realisation that effective reorganisation and re-appropriating processes meant that a manager would lose some of the people reporting to him. It threatened hierarchy, careers, well won power bases and spans of control. Taking the logic further, it even threatened livelihoods by questioning why Product Development Support needed six highly paid managers. Work was divided between sections in Barcelona and Cranfield and managers were doing aspects of the

same job, and sometimes the same job for different projects in different ways. It made sense to centralise the job in either location but each site had a different manger. The compromise was talk of working together, dual responsibilities and dotted lines of reporting functions. The Director of PDS argued:

"I've two experienced managers who have been with the company for a long time. Surely we will benefit and the company will benefit if we can get them to work together."

Step 1.4 Prioritise Processes to be Captured

The next step is to prioritise the processes to be captured, this was done using a workload analysis matrix which showed the timing for upcoming projects and showed what processes needed to be in place by when (Table 8.6). Completing the matrix enables the senior to prioritise the knowledge mapping activities. The analysis sheet also shows the resources available and capable of carrying out the processes and the time necessary to perform each process (Table 8.7).

Supplier Management - VY4												
"By focusing on NTCE's QCD targets and adhering to relevant legislation, procure trial parts to support Nissan's vehicle development schedules and Value-Up activities"												
					Procedure			Priroty			Program Stage	
Process/Activity	Value added/Non-value added VA/NVA	Activity/Sub-process	Who	Resource Man Hrs PW	Existing (documented)	Exists but needs update	New	H	M	L	Project to Support	Date Required
Ordering												
	NVA	Design release (Proto ANEMS to NETS)	DW		1			1			P32L	May-05
	VA	Send Trial Parts Orders to suppliers (TPO Faxing)	Buyers	33		1				1	P32L	Dec-05
	NVA	Module component release monitoring & control	MG	2			1	1			X61B	May-05
	VA	Send Special Parts Forms	Buyers	5	1				1		E11A	Jun-05
				40								
Purchasing												
	NVA	Cost Estimation	HM	10			1	1			X61B	
	VA	Trial Parts & Tool Quotations analysis	Buyers	20	1			1			X61B	
	VA	Cost Negotiation	Buyers	20						1	E11A	Nov-05
	VA	Purchase Order Confirmation	Buyers	5	1				1		E11A	Aug-05

Table 8.6: Workload Analysis Sheet

The following table explains how the Workload Analysis Sheet can be understood by describing the activity against each column heading.

Column Title	Description/Activity
Process/Activity:	States the Main process to be mapped.
Value Added /Non-Value Added	Asks for a judgement: Is the process value added or non value added?.
Activity/Sub process:	This lists the activities or sub activities breaking the main process into more manageable sub-processes. This may be necessary where a single individual is only responsible for part of a bigger process.
Who	Individual(s) responsible for carrying out this process
Resource	The total number of hours per week required to perform this process.
Procedure	Existing (documented): a procedure exists and is currently up to date. Exists but needs update: a procedure exists but is no longer up to date. New: no procedure currently exists therefore a new procedure is required.
Priority	The priority of the process within the section. (High/Mediuim/Low) The priority can be chosen due to a number of factors such as: - • Percentage of resource required on section • No procedure exists or current not up to te and will soon be necessary on a specific project. • Number of staff that can carry out this process is limited.
Programme Stage	The process is necessary to support which Vehicle programme (eg. P32L) and the date by which the procedure needs to be completed – up to date. (eg. May 05)

Table 8.7: Understanding the Workload Analysis Sheet

8.7.2 Phase Two: Knowledge Mapping & Mindsets

Phase Two is about understanding the business; making the Knowledge Maps, deciding the necessary mindsets and specifying what needs to be delivered, when it needs to be delivered and why and how it needs to be delivered.

Step 2.1: Make Knowledge Map

The Knowledge Maps were made from the perspective of the people working in Product Development Support. Culturally, the Four Field Knowledge Maps (Chapter 7: 178) proved inadequate and through the pilot expanded into eleven fields to act as a countermeasure to some of the previously mentioned findings of the study. The author imagines the original format may have sufficed at Komatsu, Texas instruments' semiconductor plant in Kyshu given the Japanese sense of collective responsibility but it needed to be more focused and responsibilities needed formalising to accommodate NTCE's individualistic organisational culture.
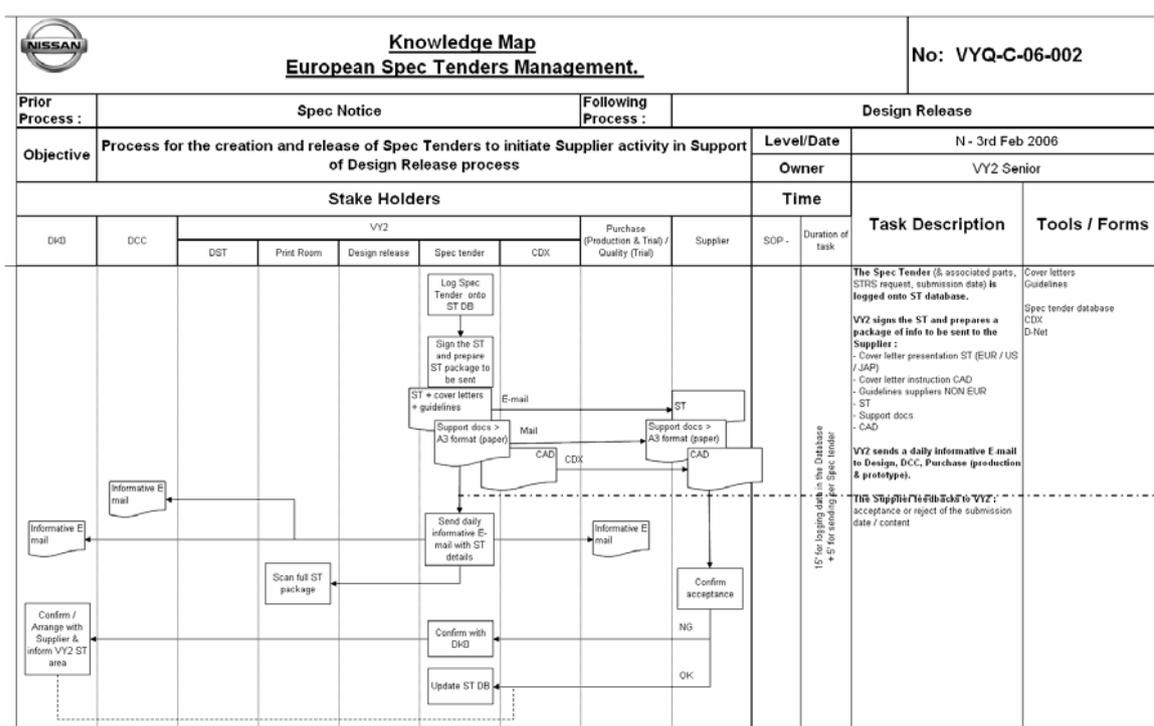
Figure 8.10: Knowledge Map European Specification Tender Management

Step 2.1.1   Title

The title of the Knowledge Map, in the example above shown as European Specification Tender Management gives the name of the process being mapped and the knowledge needed to work the process. Specification Tenders are used by Nissan to inform Suppliers about the technical requirements of a system or component. The

Knowledge Map shows how that information is relayed to the Supplier and managed by the company.

Step 2.1.2 Knowledge Map Number

This is the number which has been allocated to the Knowledge Map. VYQ is the code name for Engineering Administration and Data Validation Section. The following letter and numbers indicate where the Map is stored on the Portal (NTCE Intranet).

Step 2.1.3 Prior Process/Following Process

These boxes show the Prior Process and the Following Process. In the example shown (Figure 8.10) the Prior Process is the Specification Notice, which details the specification and the Following Process is the Design Release, the process for issuing and managing the authorised drawings and associated CAD files. It is linked to the Generic Master Schedule and informs the reader where the processes and the people doing the actual job fit into the bigger picture of Design and Development. It also shows which processes need to be improved if the inputs from the prior process are sub-standard. Defining inputs and outputs not only for the overall process but also for its sub processes will help focus the process flow, aid in identifying Key Performance Indicators and in determining the timing of sub processes.

Step 2.1.4 Objective

This box clarifies the objective of this process, if the objective is not clear, it is difficult to find the most efficient way of achieving and meeting the objective. In the example the objective is "for the creation and release of Specification Tenders to initiate Supplier activity in support of the Design Release Process." It defines a clear objective for the whole process and also the sectional objective as part of that process. This was found to be necessary to keep a focus on the overall purpose of the process and to aid in determining what is in and out of scope with regard to the mapping activity itself and ensuring people have a common purpose which in itself builds trust (Kramer, 1999).

Step 2.1.5 Level of the Knowledge Map and Date Issued

The level and date the Knowledge Map is issued is necessary for tracking purposes and ensuring the latest level Map is being used. It also acts as a history file to ensure lessons are learnt and mistakes are not repeated and for people to demonstrate the benefits gained by mapping knowledge and to see how knowledge and experience have improved the process.

Step 2.1.6 Owner

This is the role of the person accountable to Senior Management for delivering the objectives of the process. He or she manages the process and is responsible for the upkeep of the Knowledge Map. This clearly lets others in the company know who they should contact if there is a problem with the process or if the process requirements change or if the Inputs/Outputs need to change. Allocating an owner was perhaps the most important change to the knowledge map. The study proved that if a process does not have someone accountable for it, it is less likely to be performed well. Meetings were held, processes were mapped but there was no collective sense of responsibility or in many cases, agreement about who should deliver what when things went awry. It was difficult to ascertain whether people were shirking responsibility or genuinely had different interpretations and understanding of their responsibilities but it was clear that discussions only became meaningful and delivery guaranteed when people were allocated responsibilities and names were put against each knowledge map. Managers were given responsibility for all the processes grouped and ballooned together as being their responsibility on the interrelationship map. Similarly, the managers appropriated responsibility to their seniors for sectional processes and for producing the appropriate knowledge maps. The seniors then allocated the tasks shown on the knowledge maps to their staff. In the example shown, the Senior of VY2 (a subset of VYQ) is the responsible engineer and owner of the Knowledge Map.

Step 2.1.7 Stakeholders

These boxes list all the stakeholders at organisational, divisional, departmental or sectional level involved in the process and show exactly what they are responsible and accountable for or that they need to be consulted or informed about something that has happened in the process. It is a formalised and structured network of contacts which legitimises contact between those involved and goes some way to mimicking the more social and informal networks in NTC by acting as an invitation to dialogue. It gives them permission to enter a community for the purpose of executing their jobs and the author hopes that by knowing and fulfilling their job role they will win the necessary respect and recognition they need from their management and peers. They will also earn trust and be given the support they need to do their jobs and with time relationships will mature and they will feel safe in their work. Building a culture of trust will let the dialogue go to another level; socialisation allows the company to learn how to share substantive matters (Buckman, 2004). Knowledge is more easily disseminated between people who interact socially, have developed trusting relationships and share common values and norms (Nahapiet and Ghoshal, 1998)

Step 2.1.8 Process Flow

This shows the flow of information between the different stakeholders which is managed by the process owner. The steps for agreeing the process are shown below:-

- Identify, at high-level, the main activities (core processes) that occur within the overall process.
- Gradually breakdown these activities into sub-activities adding more detail as necessary. Breaking the process down in this way helps maintain focus on the process objective.
- Using Knowledge Map symbols (Figure 8.11) transfer the process flow onto a Knowledge Map and add task descriptions, any necessary skills, tools, and identify the Key Performance Indicators needed to measure the progress of the process.

- The final level should show enough detail to understand, monitor, manage, and analyse performance.

Step 2.1.8.1

The symbols used for making the Knowledge Map are those recommended by the International Organisation for Standardisation. (Figure 8.11)
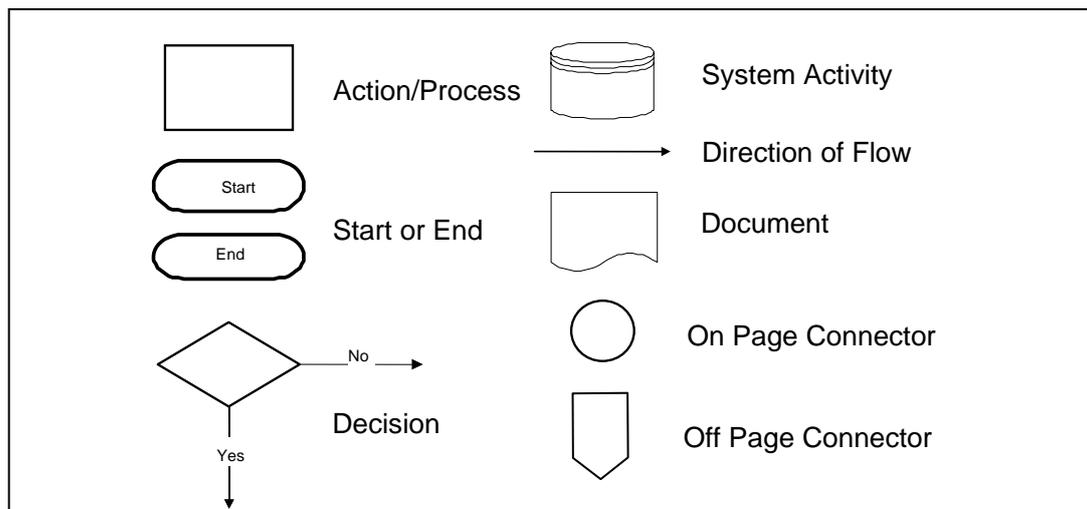
Figure 8.11: Knowledge Map Symbols
(International Organisation for Standardisation, ISO 5807 (n.d.)).

Step 2.1.9 Time

This box shows the time it takes an experienced, competent person to carry out the task and can be in minutes/hours/days/months/day of week. By using the "ideal" or "target" time, rather than actual time it is easier to identify where staff need to be developed and can be used to support personal development and training plans. It also shows, in relation to "Start of Production" (SOP) when the activity takes place. During the study completion of this box was perhaps the most contentious – and still is - because it smacked of time and control" and people worried that if they failed to deliver within the allotted time they would be blamed

2.1.10 Task Box

The task box provides details of how to perform the task or activity and also includes "care-points" or guidance notes based on experience to ensure past mistakes are not repeated.

Step 2.1.11 Tools/Forms/Skills

This box lists all the Tools/Forms/Skills required to perform the task. E.g. Excel Skills, Negotiation skills, Spanish etc. and the required level of attainment necessary to help people learn the process more quickly, support staff training plans and risk management. This box also houses the agreed Key Performance Indicators (KPIs) for the process. Key Performance Indicators (KPIs) help define and measure progress toward goals. They are quantifiable measurements that reflect the critical success factors of the process. In developing KPIs, a user or developer defines target performance levels and then decides the best way to represent variance from that target. (Information Builders, n.d.). KPIs should complement a business overall targets and relate to its core activities and can be used as a performance management and improvement tool by focusing employees on achieving the business goals (Cranfield School of Management, n.d.) but one of the findings of the study is that there is a danger of "tick box" management in focusing on KPIs rather than the process. The key learning points about setting KPIs were that they:

- Must reflect and be critical to the success of the business
- Must be measurable and comparable
- Must allow for corrective action
- Must be used sparingly, this keeps everyone focused on the key objectives and makes performance monitoring easier.

Step 2.2 Develop the Mindset Questionnaire

Another finding of the study was that some managers and seniors were unable to validate the Knowledge Maps because they lacked the necessary experience. It was usually because they had been promoted to managerial positions in other parts of the

company and then transferred to Product Development Support. The author decided to develop a mindset questionnaire after having witnessed many of the meetings that the PDS Director had with his managers. "A mindset is the habitual or characteristic mental attitude that determines how people interpret and respond to situations" (Dictionary.com, n.d.). Irrespective of subject matter, a clear pattern emerged highlighting that the theme and type of questions being asked were similar in each instance. Noting this, the idea was to make frameworks for learning or mindsets by capturing the questions asked during meetings. The author shared the questions with the Managers and Seniors but not the answers and encouraged them to find and explain the answers for themselves because giving people a structured set of answers to choose from often results in a tick box mentality. It was hoped that the working relationships that developed as a result of these meetings would sustain the flow of knowledge and experience and lead to further questions and deeper understanding and that this would lead to a questioning rather than a checklist mindset. Generally, questions asked about processes include:-

- Who are the customers of the process?
- Who performs each activity?
- What generates the task?
- How do we do it and why?
- What decisions are made in the process?
- What happens next?
- Who reviews it and when?
- What are the nature, frequency and cause of errors/problems?
- How are errors/problems/exceptions handled?
- What is the risk to the project?
- What are the bottlenecks and why do the still exist?
- What is the output?
- Where does the output go?

The author listened, recorded and grouped the questions being asked and summarised them in the following table:-

What is being done?	Why is it being done?	What else is being done?
Who is doing it?	Why are they doing it?	Who else could do it?
When are they doing it?	Why then?	When else could it be done?
Where are they doing it?	Why there?	Where else could it be done?
How is it being done?	Why that way?	How else could it be done?

Table 8.8: Mindset Questionnaire

Step 2.3 Critiquing the Standard and Format of the Knowledge Map

No.	Category	YES	NO	N/A	Examples/Comments
Title & Objectives:					
1	Is the title clear and concise?				Eg.Trial Build Concern Management
2	Is the objective a clear overview of the process?				Eg.To document all concerns raised during a Trial Build activity and ensure full closure
3	Does the completed process satisfy the objective?				Comment: check that the process flow satisfies all the aims stated in the objective.
4	Is there a KM number/level/issue date?				E.g. VYR-D-06-011 Level N November 06
5	Is an owner clearly stated?				E.g. VY1 Senior
Process Flow:					
6	Can you determine a clear start and end point(s)?				Comment:Start and end points should be shown using an elipse symbol or a rectangle with rounded corners.
7	Does the process follow a logical flow?				Comment: check all possible routes through the process - ensuring that the required outcome is achieved in each case.
8	Are all tasks linked?				Comment: check that there are no 'floating' tasks/activities.
9	Have the correct symbols been used for each task?				see Knowledge Map 'How to Complete' -----add location
10	Have any none standard symbols used been added to the key?				Comment: agreed symbols should be used wherever possible - if a none standard symbol must be used then a description of that symbol should be given at the bottom of the Map.
11	Are all requests/information to and from other stakeholders clearly defined – format, how, where?				E.g. issues files on O:\ drive to be completed by Design/DST
12	Is a lead stakeholder identified for shared activities?				Comment: i.e. who leads & organises a meeting?
Task Description:					
13	Does it inform you HOW to perform the task, or reference a document that does?				E.g. 'see job instrucion VYR-D-06-001' or 'How to check Design note' N:/VYP/VY2/design notes/How to check.doc
14	Can contain a statement as a 'care point' but MUST be accompanied by a description of the task.				Comment: a task descrition can not be a statement or care point on it's own.
References:					
15	Are Knowledge Maps, relevant documents, procedures, job instructions, guidelines, templates, checklists etc. referenced correctly?				E.g. TIS Knowledge Map VYR-D-06-023 (i.e. Document Name & Number and/or location on server)
16	Are all documents correctly hyperlinked where possible?				Comment: ensure hyperlinked documents are located where all relevant stakeholders can access them.
Skills:					
17	Are skill levels indicated correctly?				E.g. Excel Pivot Tables rather than Excel
KPI's:					
18	Are all KPI's clearly stated?				Comment: KPI's should be measurable & comparable - state how they will be measured.
19	If there is a company KPI is it shown within the process flow?				Comment: if a company level KPI is stated then how this is monitored within the process flow should also be indicated - i.e. at section/group level.
Level:					
20	Are the 'Change History' fields completed for Knowledge Maps which are greater than Issue Level 'N'?				see Knowledge Map 'How to Complete' -----add location
Times:					
21	Are all 'Duration' & 'When or Time to Event' columns filled in?				Comment: can be minutes/hours/days/months/day of week
Systems:					
22	If the process includes use of other systems, state how/what is required to gain access to the system?				E.g. Username and password required for G2B - state where to obtain these from.

Table 8.9: Questionnaire for Critiquing the Standardisation and Format of Knowledge Maps.

It also became apparent through the study that there needed to be a standard for formatting and making the Knowledge Map and an acceptable level had to be set for each of the eleven fields to ensure the standard was met and maintained. It was also important that this standard was codified to open and facilitate discussions with intransigent people who believed the Knowledge Maps were complete. The reason for their "intransigence" was difficult to categorise under one any one of the findings in Table 8.8 but it most certainly existed and the author's countermeasure was to produce the checklist questionnaire as shown in Table 8.9.

Step 2.4 Levelling the Knowledge Map

The Knowledge Maps were made from the perspective of working in Product Development Support and once completed, they should be discussed and levelled with all stakeholders in the process to clarify responsibilities and expected inputs and outputs from all those involved in the process. This needs to happen before the Knowledge Map is submitted for approval by the Director of PDS and publication on the Portal as the "way we do things around here."

8.7.3 Phase Three: Knowledge Promotion

Knowledge Promotion, as its name suggests is about continually promoting the importance of the management of knowledge within the company. The strategies for knowledge promotion revolve around leadership, discipline and learning. This is probably the most difficult of the three OAK stages because it entails a commitment to change not only in the way of working but to the philosophy underpinning those practices and ultimately the organisational culture and at the time of writing is still under discussion with NTCE Directors. Knowledge Promotion is about constantly reflecting on practice and building and sustaining an organisational knowledge base through the constant use of the Knowledge Maps. The Knowledge Map is a contract between the organisation and its members and to make them work requires discipline at every level of the organisation and to make this happen there has to be a long term commitment to OAK which has to be driven from the top.

The following steps outline the author's strategies for Knowledge Promotion.

Step 3.1   Make Knowledge Maps Focal to the Business

The author proposes that Knowledge Maps become the focal point of the business by using the techniques described above. Knowledge Maps are meant to be in a constant state of flux always open to continuous improvement and innovation. They are not rigidly bureaucratic but offer a flexible framework in which to operate and people are able to change the map at any time providing it improves efficiency. They are social support systems for decision making, knowledge application, communication, dialogue and for finding information. They allow for different cultural interpretations and accommodate people to learn in different ways and should be constantly critiqued with a view to improving efficiency and issues resolved as they arise.

VY0/VY6 Project & Concern Issues									
Name	**Date Raised**	**Dept Effect**	**Project Effected**	**Concern**	**Countermeasure**	**Additional Hours**		**Repetitive Concern Y/N**	**Closed / Open**
David Maxwell	15-Apr-04	VY6	E11A	Karmann Data was repeated on various TCF'S, printing of paper copies was also required to cross reference data.	Feedback required to Karmann, requires a more efficient method of checking that NTC-Europe receive all the correct data.	5	hrs	Y	C
Neil Fleury	21-Apr-04	VY6	P32L	Design had gained access to a complete space vision cell, and then saved over VY6 completed work.	Restored the file to last saved copy, via IT. Read only access outside of VY6.	10	hrs	N	C
Kim Dennis	22-Apr-04	VY0	E11A	C2 - metal tooling not K/O to plan resulting in probable late parts. VY6/5/2/3 were requested to gather information at short notice to support a meeting. Information was gathered from various lists from different sources (Design, NMUK, VY5, VY2, and VY3.	1 Control Document (ETRS).	20	hrs	N	

Table 8.10: Proposed Concerns and Opportunity Log

The author initially proposed that each section kept a log of concerns and opportunities for review (Table 8.10) which gives a brief description of the concern

and countermeasure and also the amount of time it took to resolve along with the name of the engineer who raised the concern, the date on which it was raised and the affected department and project in question but the sections involved in the PDS pilot found it easier to highlight areas on working drafts of the Knowledge Maps rather than continually updating the Concerns and Opportunity Log.

Step 3. 2 Train Staff

People have to be motivated to learn and if that learning is not intrinsic, from within the individual then it must be extrinsically motivated, which means it has to be from the environment (Fontana, 1985). To extrinsically motivate people the author proposes to change the current task based skills matrices (Figure 8.12) to one which is built around Knowledge Maps and then reward people for their performance against the maps (Figure 8.13).

Nissan Technical Centre Europe

SKILL MATRIX - PROTOTYPE ENGINEERING (VY6)

Section	VY6 - Prototype Engineering
Group	
Date	

Points	
I	AWARE - Basic appreciation but limited experience
L	FAMILIAR - Detailed knowledge, and practical experience
U	SKILLED - Considerable knowledge and expertise
O	EXPERT - Highly competent, can train others

SECTION 1 - Skill Listing	SECTION 2 - Current Level							
	Individual Current Level							
Tasks								
Staff	A	B	C	D	E	F	G	H
DMDR Planning	O	O	I	U	I	N/A	I	N/A
DMDR Execution	O	O	I	U	I	N/A	L	O
Project Management	U	U	I	I	I	N/A	N/A	N/A
Vehicle Structure	I	I	U	O	N/A	N/A	N/A	N/A
Engine Structure	I	I	O	N/A	N/A	N/A	N/A	N/A
Chassis structure	I	I	O	N/A	N/A	N/A	N/A	N/A

Figure 8.12: Current NTCE Skills Matrices Built Around Tasks

The current Skills Matrices lists the task:- DMDR (Digital Mock Up Design Review) Planning, DMDR Execution, Project Management etc. and against each staff member (A-H) rates them as Being Aware (I), Familiar (L), Skilled (U) or Expert (O). The

proposed Skills Matrices lists the Knowledge Maps, in the following example shown as the Design Element Plan (Reference Number VYS-06-A-003), list the necessary skills or knowledge (Planning Paper Knowledge Map, Meeting Skills, Basic MS Excel Skills etc.) and against staff members (A-F). The proposed Skills Matrices also includes columns for individual target capability levels and existing and target levels for the section.

Nissan Technical Centre Europe

SKILL MATRIX - TRIAL ENGINEERING (VY6)

Aware - Basic appreciation, but limited experience
Familiar - Detailed knowledge and practical experience
Skilled - Considerable knowledge and expertise
Expert - Highly competent, can train others

Tasks / Skill / Knowledge / Process	Knowledge Map		SECTION 2 - Current Level / Target					
	Name	Reference Number	Individual Current Level					
			AA	BB	CC	DD	EE	FF
Design Element Plan Process [Key Process]	**Design Element Plan**	**VYS-06-A-003**						
Planning Paper Knowledge Map	↑	↑		O	-	I	I	L
ETRS Knowledge Map	↑	↑		U	-	I	I	U
Meeting skills	↑	↑		O	-	L	I	L
Listening skills	↑	↑		U	-	L	I	U
Basic communication skills	↑	↑		O	-	U	I	U
Basic MS Excel skills	↑	↑		L	I	U	I	I
Basic MS Outlook skills	↑	↑		U	I	U	I	I
Design Element Plan Job Instruction	↑	↑		O	I	I	I	L
Intermediate MS Excel skills	↑	↑		O	I	I	I	L
WIN CMA Publishing skills	↑	↑		O	L	L	I	L
Time Management skills	↑	↑		O	I	I	I	I

Figure 8.13: Proposed NTCE Skills Matrices Built Around Knowledge Maps

The author proposes people are made responsible for their own training. The manager has the responsibility for developing his senior and the senior has the responsibility for developing his staff but the training and development plans are owned by the staff members themselves. They are responsible for attending the relevant courses as provided by the company and in effect become responsible for their own learning. This cycle of continuous learning is explained in Figure 8.14. Targets are set against the learning necessary to execute tasks shown on the Knowledge Maps and capability is improved over time. The Knowledge Maps are continuously updated and improved from the experience of daily business and there are regular reviews with employees to gauge the effect and success of their learning (Figure 8.14).
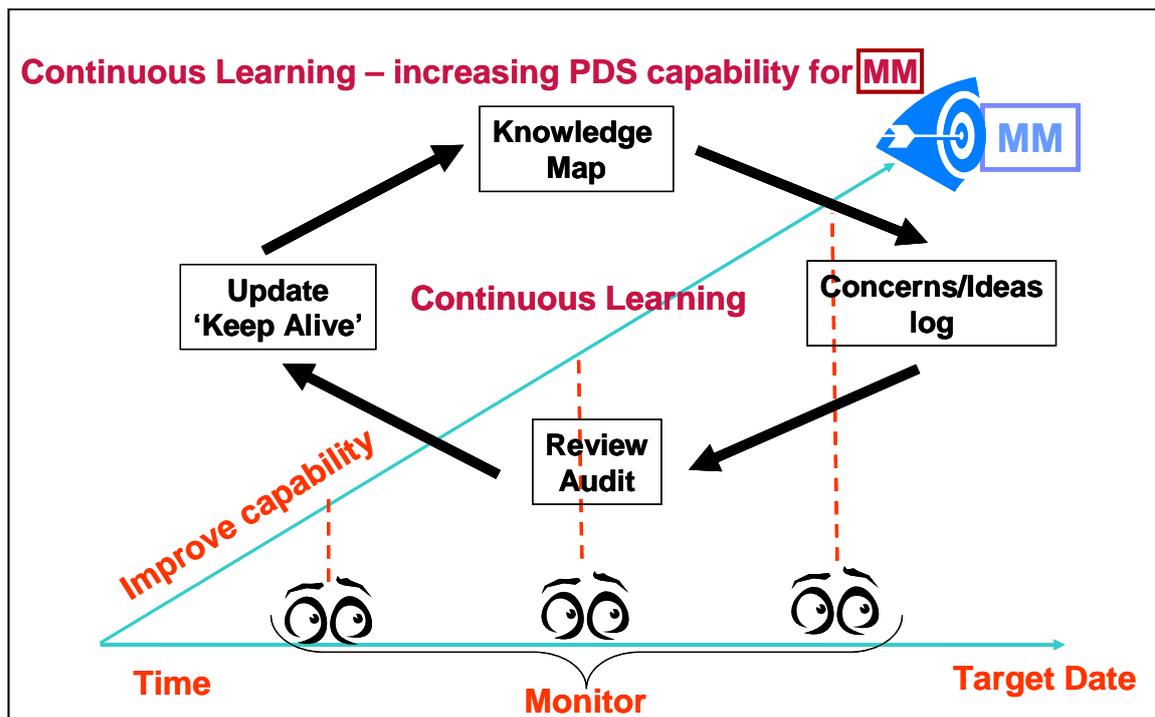
Figure 8.14: Cycle for Continuous Learning

Step 3.3 Reward Performances, Learning and the Management of Knowledge

Nissan, as already discussed is driven by management intent on meeting objectives. Promotion depends on performance; it is a race, a competition. It is about the survival of the fittest where comparisons are made and achievements are scrutinised and measured. The company wants people to capture, codify and share knowledge and yet rewards people for individual contributions through Management By Objectives which can inhibit cooperation in teams (Balkin and Gomez-Mejia, 1992). Management has to strike a balance and move from command and control to direct and enable. Carroll et al. (2003) report that organisations move out of the control stage when they recognise the limitations of top-down control and start to promote participation and the open exchange of information throughout the organisation and between the organisation and the outside world. It is a difficult balance and needs to be culturally mediated to ensure organisational efficiency and sustainability.

People are reluctant to share knowledge because they fear being marginalised or becoming expendable. Neither will they learn in a vacuum, their learning has to have meaning in that it addresses what they perceive is important to them and is relevant to

the context in which learning takes place. They are also looking for a return on their investment for the time and effort it takes them to learn and most frequently this is in the form of reward and recognition, which may lead to greater job security and enhanced career prospects (Antonacopoulou, 1999). Knowledge is power; it gives people a sense of worth, a position of privilege and superiority or they may resent not being adequately rewarded for sharing for what they believe, is hard-won success (Szulanski and Capetta, 2003).

The author does not propose that the company abandons Management By Objectives, but to use a combination of individual and team based incentives to encourage people to share (Foss and Mahnke, 2003) and work collaboratively which is crucial for successful knowledge management activities (Quinn et al 1996; Pan and Scarborough, 1999). He also suggests that teams are empowered to distribute rewards amongst themselves based on a subjective evaluation of performance. This is based on their having inside knowledge about team dynamics, and of how individuals have contributed to the team performance which, according to Gibbons (1998) is probably superior to that of external management.

Step 3.4   Audit Knowledge Maps

The author proposes to have independent audits made of the Knowledge Maps. Staff "hide" things, whether consciously or unconsciously is debateable but independent audits are necessary to ensure consistent and sustainable working practices. Independent audits are also necessary to confirm that people are actually doing what they say they are doing rather than what they "think" they are doing.

Phase	Title	Step	Activity	Responsibility
1	Knowledge Strategy	1.1	Agree Role of Section	Manger and Senior
		1.2	Make Inter-Relationship Map	
		1.3	Organise Around Knowledge	
		1.4	Prioritise Process to Capture	
2	Knowledge Mapping and Mindsets	2.1	Make Knowledge Map	Senior, Section and Manager
		2.2	Develop Mindset Questionnaire	
		2.3	Critique the Standard and Format of the Knowledge Map	
		2.4	Level with all Stakeholders	
3	Knowledge Promotion	3.1	Make Knowledge Maps focal to the point of business	All
		3.2	Train Staff	All
		3.3	Reward Performance and the Management of Knowledge	Director Managers and Seniors
		3.4	Audit Knowledge Maps	Audit Section

Table 8.11: Revised OAK Methodology

8.8 Presentation to PDS Director and Managers July 2005

The author presented the results of the study and the proposed OAK Methodology to the PDS Director and Managers in July 2005. Whilst accepting the themes, results and initial analysis of the study the PDS Director was concerned that they were subjective rather than objective and believed they would be dismissed by the other Directors as inconsequential.

"Engineers deal in facts. That's all they are interested in. You know what they are like. They see themselves as being logical and rationale. I agree with all you say. I've lived it. I've seen it for myself but how do we convince them?" PDS Director

8.9 Conclusion

This chapter has presented Phase One of the Pilot to Organise Around Knowledge (OAK) in Product Development Support Department (PDS). It began with a short description of the purpose, structure and composition of the department and then outlined the emerging and changing research structure and methodology and then discussed and presented a summary of the results of the pilot activity. Phase One of the pilot showed that Product Development Support is not fully in control of its business and that processes are unclear, out of date or non-existence and there is a difference of opinion about roles and responsibilities at all levels. It also showed that people need recognition, respect, reward, trust, support, safety and healthy relationships not only to make the Knowledge Maps work. The author used the findings of the study to revise the OAK Methodology but the Directors still not convinced, they needed facts and objective data. The chapter concluded with a detailed description of the revised OAK Methodology. This chapter made the following theoretical and practical contributions to knowledge.

8.9.1 Theoretical Contributions to Knowledge

- NTCE has relied on individuals to drive it forwards and is not learning from past mistakes.

- There is a blame culture at NTCE and past change programmes have failed to become embedded leaving the workforce cynical about any new initiative resulting in resistance to change. These organisational mindsets have been allowed to develop over the years and are contrary to the efficient running of the department.

- People need affirmative feelings of Recognition, Respect, Reward, Trust, Support, Safety and Relationships to work efficiently. Although these feelings are the same as needed by human beings to thrive in any circumstances it is important to note that this research indicates that the words labelling these emotions are culturally mediated and had different connotations depending not

only on the nationality of the people involved but also the organisations to which they belonged.

8.9.2 Practical Contributions to Knowledge

It would be useful for researchers and practitioners to

- Understand the culturally mediated affirmative meanings of Recognition, Respect, Reward, Trust, Support, Safety and Relationships in the organisations in which they work

The next chapter presents and debates the results of phase two of the pilot and concludes the field work for the study.

Chapter Nine

Phase Two: Organise Around Knowledge

9.0 Introduction

The Chapter describes Phase Two of the Study to Organise Around Knowledge
(OAK) where the author revisits, reconfigures and justifies his findings based on both
subjective to objective data. It also reflects on the key findings of the study and shows
how organisational cultures can sometimes become dysfunctional and closes Section
Three of the thesis.

SECTION FOUR: The Future of
Knowledge Management at Nissan
and Conclusion to the Study
Chapter Ten: The Future of
Knowledge Management at Nissan
Chapter Eleven: Conclusion;
Contributions to Knowledge
Management within NTCE and
implications for further study.

SECTION THREE: Developing and
implementing a Strategy to Organise Around
Knowledge
Chapter Six: Putting a face to Knowledge
Management at NTCE
Chapter Seven: The proposal to Organise
Around Knowledge
Chapter Eight: Phase One Pilot to Organise
Around Knowledge
**Chapter Nine: Phase Two Organise Around
Knowledge**

9.1 A New Strategy

"Engineers deal in facts. That's all they are interested in. You know what they are like. They see themselves as being logical and rationale. I agree with all you say. I've lived it. I've seen it for myself but how do we convince them?" PDS Director

The author struggled with this conundrum for quite sometime. The basic premise of his argument is that efficient knowledge management is in identifying and organising around the knowledge which is crucial to the future of the company. The study to date had resulted in the OAK Methodology and the feelings underpinning the collaborative relationships thought necessary to successfully implement and use Knowledge Maps. It was this train of thought that led to the development of the next part of the research strategy. Previously the author surmised that for the Maps to work then staff have to behave and feel in a certain way. Taking this logic further it seems reasonable to assume that for the Maps to work people have to behave in a certain way, feel a certain way and be managed in a certain way for the efficient management of knowledge. (Figure 9.1)
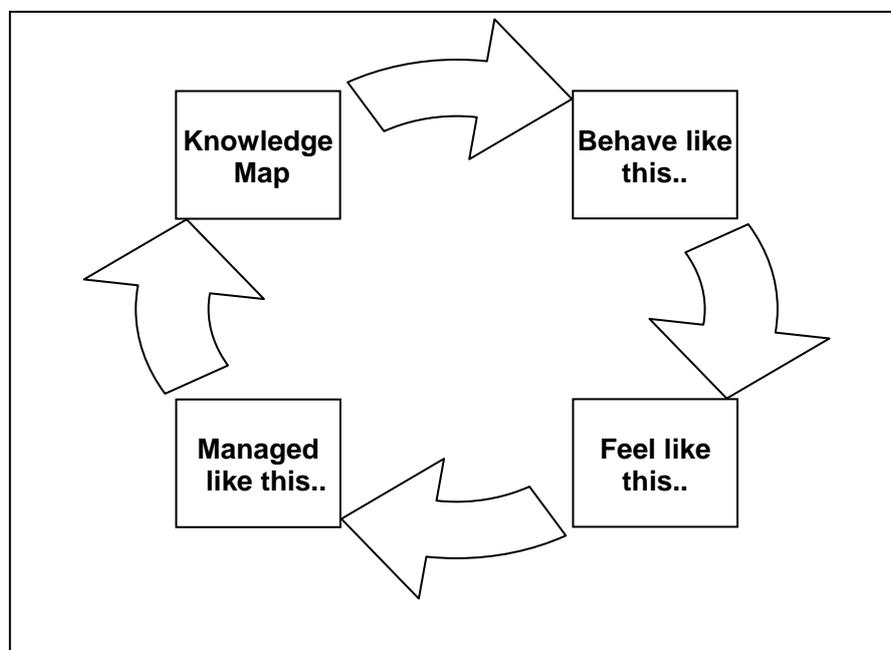
Figure 9.1: Managing the Knowledge Maps

Based on this hypothesis the author devised a strategy to identify and quantify these managerial attributes. He proposed that the pilot continued in PDS for a further six months using and testing out the revised OAK Methodology. During that time, he and his colleagues would hold a series of workshops at Managerial, Senior and Staff levels. There would be two workshops, the first in August to identify and quantify the necessary managerial behaviours and the second in December to confirm the August findings. Once again, the strategy which is presented in Figure 9.2 is shown as a linear activity but in reality it emerged over time. In between these workshops the author proposed to revisit the original interviews to triangulate and quantify the findings with the seven Behavioural Workshops held to identify the way staff needed to feel to work collaboratively and successfully implement OAK.
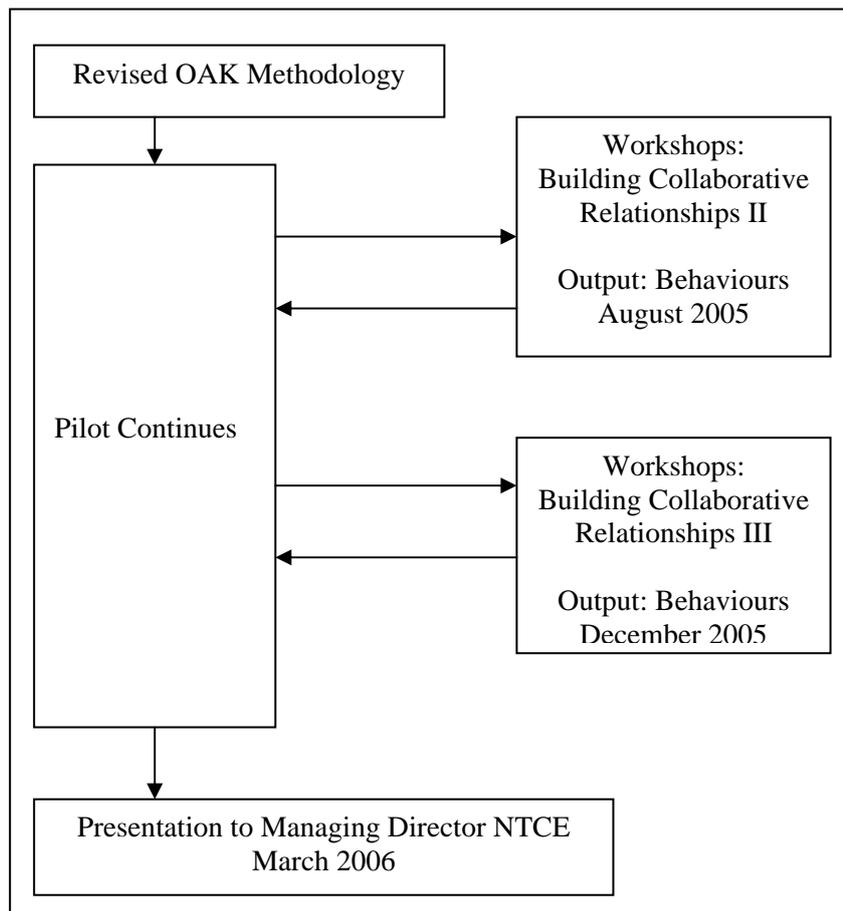
Figure 9.2: Phase Two: Research Structure

9.2 Building Collaborative Relationships II

There were three peer led workshops, the author led the management group, the Senior of the Knowledge Management Section led the workshops with his peers and an engineer from the Knowledge Management section led the group comprising of staff from the engineer/controller and administration level of the company (Table 9.1). This was felt necessary to facilitate a more open and honest response at every level but the methodology employed for each workshop was the same.

Workshop	Total Number in PDS	Number of Workshop Attendees
Managers	6	5
Seniors	12	9
Engineers/Controllers, Administration Officers and Assistants	80	17

Table 9.1: Number of Attendees for Building Collaborative Relationships Workshops II

Each group was asked how they needed to be managed and how they needed to manage themselves to successfully implement the OAK Methodology. They recorded their answers on post-it notes which were then collaboratively and consensually grouped as themes and underlying factors and duplicates were removed (Table 9.2).

Themes	Underlying factors
Mixed reaction about activity	Experimentation, Communication
Some sections seem reluctant to admit benefits of activity	Feedback, Evaluation, Reviewing
Some sections very positive found 10 Step Methodology extremely useful (Even if OAK activity is abandoned section will continue to use methodology).	Self-discipline, developing capabilities
Shows we are not in control of our business	Management, Leadership, Discipline, accountability
Too much knowledge is concentrated in too few individuals.	Collaboration, sharing, training, development
Value added/non value added activities very useful	Asking why, Evaluation, Identifying opportunities
Useful as learning tool and training experience	Training method, Personal development, Improved quality, Fewer resources
Failure and reluctance of some seniors to see the bigger picture	Business ability, high-level communication, company vision,
Knowledge management not seen as being part of their job.	Self-development, personal development, discipline, delivering quicker and with fewer resources
Don't want to codify/share their knowledge	Job insecurity, lack of infrastructure for knowledge sharing, lack of time
Contractors not interested	Professionalism, incentives
Company at risk by have too many self interested contractors	company strategy, sharing, respect
Cynical workforce	poor planning, lack of feedback, alignment with strategy
Seen as another initiative, another management fad that would disappear.	poor planning, knee-jerk actions, lack of joined-up management, unwillingness to experiment
Counterproductive associations with Fast D	Lack of follow-through,

Table 9.2: List of "Themes and Underlying Factors" from the Behavioral Workshops

The author, together with the leaders of the other two groups took the resultant themes and underlying factors and collectively made an affinity diagram (Figure 9.3) and again removed duplicates and agreed that the main managerial attributes required for

the effective implementation of OAK could be grouped under the following six
headings: Leadership, Management, Teamwork, Professionalism, Entrepreneurship
and Authority (Expertise)
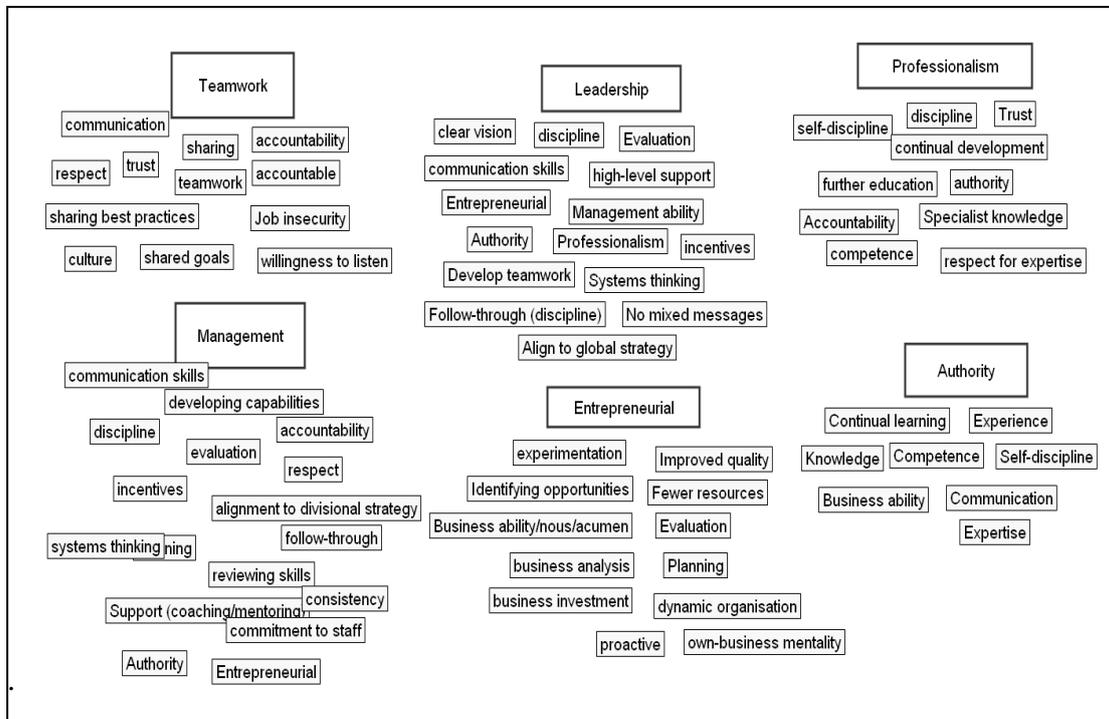
**Figure 9.3: Affinity Diagram of the Main Managerial Attributes Required for
the Effective Implementation of OAK**

The author recognised that the six main managerial attributes required for the
effective implementation of OAK did not occur in isolation but that they were related
to each other. By analysing the number of connections between the six factors (Table
9.3) and representing each bi-polar connection as a percentage of the total number of
connection (Table 9.4) the author was able to quantify, or rather present qualitative
data statistically and conclude that Leadership, Management and Professionalism
have the greatest influence at this point in time on the successful implementation of
the OAK methodology (Table 9.3).

Underlying factors	Leadership	Management	Authority	Teamwork	Professionalism	Entrepreneurial
Experimentation, Communication	•	•		•		•
Feedback, Evaluation, Reviewing		•			•	•
Self-discipline, Developing Capabilities	•	•			•	
Management, Leadership, Discipline, Accountability	•	•				
Collaboration, Sharing, Traiing, Development	•	•				
Discipline, Respect for Expertise	•	•		•	•	
Lack of Teamwork, Poor Management, High-Level Support		•	•		•	
Asking why, Evaluation, Identifying Opportunities	•	•			•	•
Training Method, Personal Development, Improved Quality, Fewer Resources	•	•			•	•
Business ability, High-Level Communication, Company Vision	•	•				•
Self-development, Personal Development, Discipline, Delivering quicker and with fewer resources	•	•			•	•
Critical evaluation skills, poor feedback	•	•				
Job insecurity, Lack of Infrastructure for Knowledge Sharing, Lack of time	•	•			•	
Professionalism, Incentives		•			•	
Company Strategy, Sharing, Respect	•	•	•	•		
Poor Planning, Lack of Feedback, Alignment with Startegy	•	•		•		
Poor Planning, Kneejerk actions, Lack of joined-up management, unwillingness to experiment	•	•				•
Lack of follow-through	•	•			•	
Poor communication, Poor professional respect		•	•	•	•	

Table 9.3: Correlating the Six Main Managerial Attributes required for the effective implementation of OAK with the Underlying Themes.

For example, taking the first line of the above chart the author and the leaders of the other two groups decided that "Experimentation" and "Communication" impacted Leadership, Management, Teamwork and Entrepreneurship.
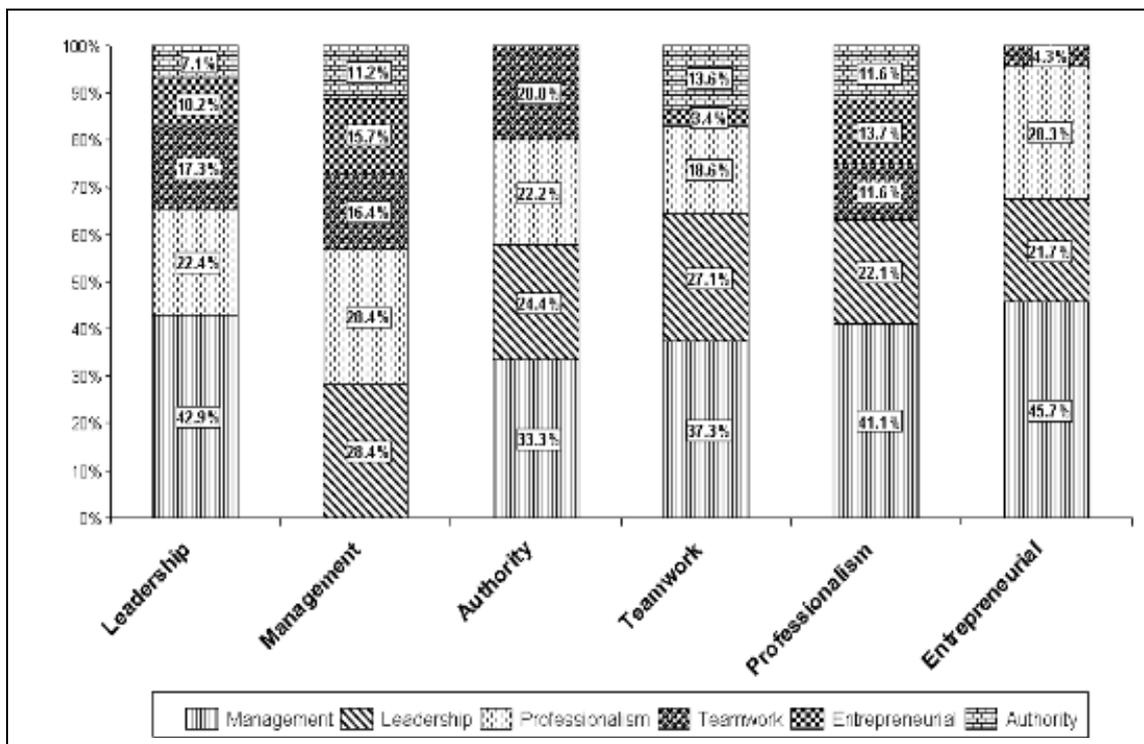
Figure 9.4: Graph One Showing the Degree of Interdependency between the Six Managerial Factors

By taking each of the factors individually and counting the number of times there is a connection with each of the other five factors, we can see the nature of the interdependencies that exist between all six factors. For example, examining the first row in the table, we can see that 'Experimentation, Communication' is determined by Leadership, Management, Teamwork and Entrepreneurship. Thus, there are three connections between Leadership and the remaining five factors: Leadership-Management, Leadership-Teamwork and Leadership-Entrepreneurship. Looking at all the underlying factors where Leadership is a determinant, we can see that there are fifteen instances where Leadership is a factor and that there are a total of thirty-five connections with the other five factors. The most numerous is the interdependency between Leadership and Management which represents fifteen of the thirty-five connections (42.9%), followed by Professionalism with 22.4%, Teamwork (17.3%), Entrepreneurship (10.2%) and Authority (7.1%). (Figure 9.4)

Managerial Attribute	Behavioural Percentage
Management	29.6%
Leadership	20.4%
Professionalism	19.5%
Teamwork	12.2%
Entrepreneurship	9.9%
Authority	8.4%

Table 9.4: Managerial Attributes Behavioural Percentages (One)

Analysing all of the six factors individually and avoiding double-counting i.e. Leadership-Management and Management-Leadership, we see that the six managerial attributes are not of equal importance in determining the successful implementation of the OAK program. Management, Leadership and Professionalism are the most important of the six factors.

From these initial results the author concludes:

1. For OAK to work, there has to be strong Leadership, Management and Professionalism

2. Entrepreneurship and Authority are relatively minor influences on the success of OAK within PDS at this time.

3. The biggest factors on the Leadership required to make OAK work are its Management ability and Professionalism.

4. Similarly, Managers who wish to implement OAK effectively must have strong Leadership and Professionalism.

5. Authority of Leaders and Managers within PDS is not seen as less important to make OAK work.

6. Management and Leadership have the biggest impact on whether the necessary Teamwork and Professionalism exists for OAK to flourish.

7. There is a perception that Entrepreneurship is not an important requisite for OAK to be successful, but that the existence of the necessary Entrepreneurship is determined primarily by Management. An individual's Professionalism and the effect of the Leadership are the next two biggest determinants**.**

9.3   Building Collaborative Relationships III

The third Collaborative Workshop was held in December 2005 and followed the same methodology as employed for Workshop II. The Workshops were led by the same people and a similar number of people attended.

Workshop	Total Number in PDS	Number of Workshop Attendees
Managers	6	5
Seniors	12	10
Engineers/Controller, Administration Officers and Assistants	78	16

Table 9.5: Breakdown of Workshop Attendees

Again, each group was asked how they needed to be managed and how they needed to manage themselves to successfully implement the OAK Methodology. They recorded

their answers on post-it notes which were then collaboratively and consensually grouped as themes and underlying factors and a graph made of the resultant themes and affinity diagram (Figure 9.5).
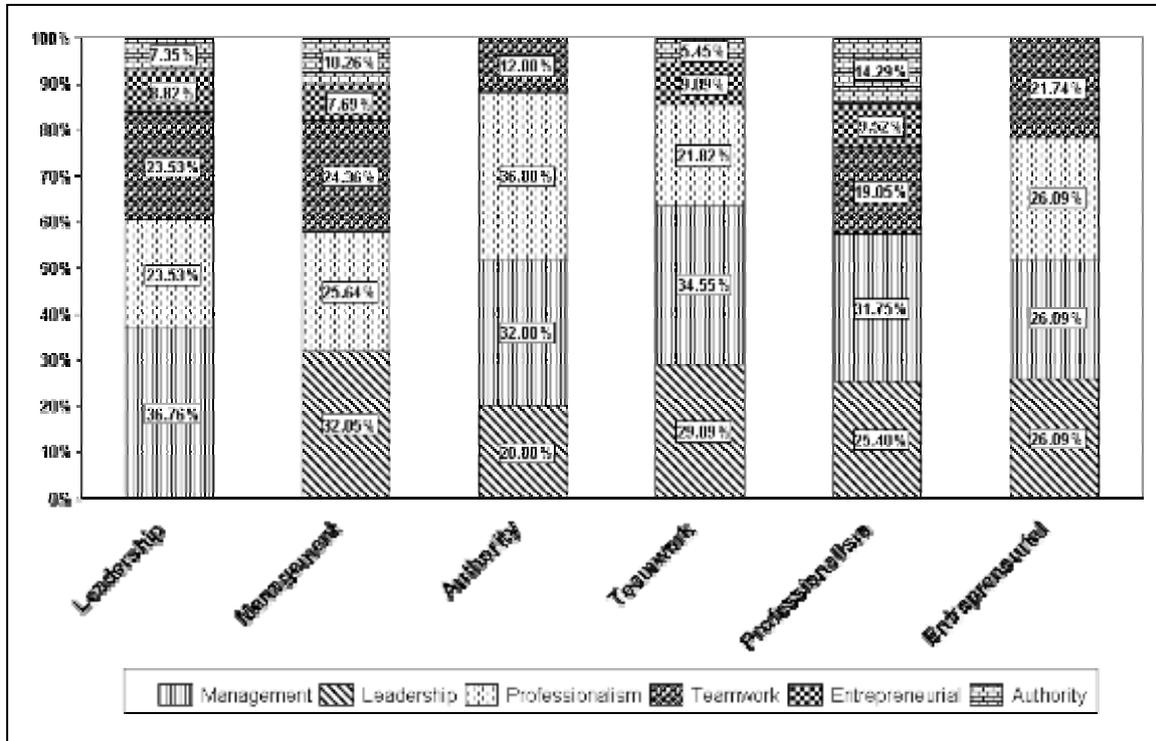
Figure 9.5: Graph Two Showing the Degree of Interdependency between the Six Managerial Factors

The results of Workshop III concurred with those of the previous workshop, in that Management, Leadership and Professionalism remain the biggest influencing factors on the success of the OAK rollout (Knowledge Maps) and that there remain deficiencies in the way PDS is managed that prevent the department from reaping the full benefits from Organising Around Knowledge (Table 9.6).

Managerial Attribute	Behavioural Percentage
Management	25.5%
Leadership	22.0%
Professionalism	19.9%
Teamwork	17.7%
Entrepreneurship	8.0%
Authority	6.9%

Table 9.6: Managerial Attributes Behavioural Percentages (Two)

From Workshop III the author concludes:

The importance of Leadership, Management and Professionalism remain as important.

1. The Management ability of the Leadership is seen as slightly less important as it was in the initial study, but Teamwork is seen as more important.

2. The Entrepreneurial ability of the Management is seen as a less important factor in the successful rollout of OAK. Their Leadership is seen as more important, but their Professionalism has declined as a factor

3. Although authority remains a minor influence on the success of OAK, it is seen as being based much more strongly on a person's Professionalism and less on their ability to Teamwork.

4. A person's authority has become a less important factor in the effective Teamwork required to roll OAK out successfully.

5. Management's influence on the Professionalism required to make OAK work is seen as being much weaker, but there needs to be a good level of Teamwork.

6. Teamwork is seen as being a bigger determinant in creating the required entrepreneurship. This increase has come at the expense of Management, which is perceived as much less important. The influence of Leadership has increased slightly.

Overall, Leadership, Management and Professionalism remain as important for making the knowledge maps work as in the initial study but now teamwork is seen to be a driving factor for change probably because the OAK Kaizen methodology is starting to become embedded within Product Development Support as the "way we do things around here" but it is still dependant on the commitment of a strong, vocal leadership. Initially people are resistant to change and often go through a traumatic process of shock and denial before they come to acknowledge and adapt to a new way of working (Clarke, 1994). It has not been an easy transition and various strategies have been employed to facilitate the introduction of change as identified by Kotter and Schlesigner (1979) and have included education and communication, participation and involvement, facilitation and support, negotiation and agreement. It

has also been necessary for manipulation, co-option and explicit and implicit coercion to make things happen.

9.4 Company Infrastructure

A key finding of the study is that Nissan's Technical Centre Europe's infrastructure for business processes is not integrated. The company has a culture of reactive management which has inadvertently and unconsciously allowed this to happen. Drucker (1989) argues that although a good organisational structure does not necessarily guarantee good performance, a poor one, no matter how good the individual managers may be, make good performance impossible. In organising and re-organising NTCE, Directors and Managers spend time discussing and agreeing organisational structures and spans of control but there has been little or no thought about the design of the business infrastructure, which is wrongly assumed to be in place. This assumption is based on a myth, which is rooted in the past that the company has hundreds of processes. Global Nissan does not have a strong corporate culture. It was established through a series of mergers and, despite the reference to Masujiro Hashimoto (Chapter 2: 21), the company has no clear founder, unlike other Japanese overseas oriented companies like Toyota (Sakichi Toyoda), Sony (Masaru Ibuka and Akio Morita), Honda (Soichiro Honda), and Matsushita (Konosuke Matsushita) whose company cultures are directed or affected by the strong characteristics of the founders.

Take, for example, Soichiro Honda who founded Honda. He was known as the oriental Henry Ford and learned the hard way about quality. His first two businesses, an attempt at manufacturing piston rings and then another to make motorised bicycles with two stroke engines adapted to run on pine root extract both failed. However he persevered and started to reverse engineer European motorcycles, not only copying, but improving the design. European manufactures believed it was impossible to run motorcycle engines at 15,000 rpm, with even faster burst. Honda proved them wrong and instigated the beginnings of a company philosophy which is still followed to this day: Honda does not buy technology. To create is to lead. The whole secret of Honda was his direct participation with the organisation and its employees; sometimes that

involvement could be considered too direct. Carling and Heller (1995) relate this anecdote in their book, The Way to Win:

> "A bolt that had been tightened by a young worker made a few more turns when Honda did it himself. "You dammed fool. This is how you're supposed to tighten bolts," shouted Honda as he hit his employee over the head with a wrench."(Carling and Heller, 1995: 210)

An engineer who used to work at Honda's plant in Swindon showed how this philosophy manifests itself in today's working practices at Honda in the UK.

"When I worked at Honda there was a saying that the Japanese, in particular were very keen on instilling into staff as a working culture: "Pass it on with Pride." It originated from the production line and was intended to encourage staff to take pride in their work and pass on "quality" to the next man in the chain. It used to drive me mad but in hindsight it worked as at least within the office areas there wasn't much "tat" passed through the administration process." NTCE Engineer (ex-Honda employee

Nissan was not influenced by a founder's philosophy, policy, or image. At one level this gave Nissan Directors the freedom to direct as they chose. It also meant that top management positions were open to all employees who were motivated enough to be interested. However, the absence of a strong philosophy or visible embodiment of the founder makes it difficult to unite the whole company, provide a clear sense of direction and keep the company moving forwards causing the company problems. Although Nissan had a good reputation for high quality products it had a poor external image, which it tried to address in January 1987 when on the first page of its annual report it stated: "Nissan – growing and changing to meet the needs of today's customers." With its long history of overseas business and operations Nissan points out two issues as key to success, one is to be an insider in the markets in which the company is present and the other is to promote globalisation of the headquarters in Japan. Asakura and Schneider (1998) argued that the absence of a strong corporate philosophy impacted Nissan's policy towards overseas operations. The company had a "clear and loose means policy," in that there was no standard way of doing things

and providing they were operating in a way to realise Global Nissan's objectives local managers were allowed a certain amount of autonomy to find their own way. They write:

> "For example while the Mexico plant is run in a typical Japanese style, the American one in Smyrna, Tennessee is run in an American way with American top management. The British plant in Sunderland is run in a half British half Japanese style. This variety depends on many factors such as the location form (Greenfield site or joint venture), history, technological level, product, human resource availability, target market and so on." (Asakura and Schneider, 1998:188)

It could be reasonably argued that Carlos Ghosn, CEO has become the founder of a "new" Nissan and is using his influence and character to direct and shape the organisational culture in much the same way as Soichiro Honda did with his company but when NTCE was formed in the early nineties, it was the "old" Nissan and the Japanese managers and senior engineers instructed locals through on the job training (Chapter 7: 180). It was the Nissan way of doing things, they collaborated with local staff and procedures were written, translated and adapted from the Japanese procedures to cover the basic processes necessary to run the business (Chapter 5: 115). These procedures were kept and filed away for reference in NTCE company manuals and formed the basis of individual learning and understanding. The problem was that these procedures were never updated or standardised and the learning became individualised and adapted for the different sections and the ever changing stream of managers and seniors.

Knowledge became power as individuals became experts in reactive management and were forever adapting processes until each section managed things in a different way. The evidence suggests this was compounded by the cultural expectations of the original team of Japanese engineers who set up the company. They had come from a company in which the managers were all powerful and they expected this to be replicated at NTCE. They believed that in recruiting experienced managers from the UK automotive industry they would be getting a similar calibre of person and expected local managers to act in a similar fashion and take on the same responsibilities as NTC managers. In the main the Japanese engineers recognised and

accepted that there were differences between individualistic and collectivist cultures but they did not understand how those differences impacted the organisation. The Japanese did not necessarily understand the strength and power of the networks in Nissan Technical Centre and the subtle form of command and control in operation. Neither did they understand why local managers were not similarly imbued with an obligatory sense of respect and responsibility and the need for relationships and the need to fit in with the group.

In NTC best practices, lessons learnt and processes are "offered" to managers. They are not enforced and standardisation is not obligatory. Managers are charged with delivery but how they deliver is their responsibility. The onus is on the individual to deliver at all costs which leads to competition and a silo mentality, all of which are "delivered" within the framework of a collectivist culture. In NTCE, Western Managers interpret the sense of respect and responsibility within an individualistic cultural framework that also leads to competition and silo mentalities that manifest themselves in a different way but in both instances it is about "self." For NTC Japanese managers, "self" is negotiated through their obligatorily relationships with others, for NTCE Western managers, it is also negotiated but out of the necessity of circumstance rather than the obligation of relationships. It follows that negotiating self through relationships is supportive and leads to a long term view whereas negotiating self out of the necessity of circumstance is relatively short term.

NTCE needs processes and Knowledge Maps to structure and mimic the relationships of Nissan Technical Centre Japan to ensure the company runs efficiently. The author used these insights to illustrate and explain the importance of integrating NTCE's business infrastructure when presenting his case to NTCE's Directors and further, used the example of product design to make his case. In designing cars the company sets out with a specification and then has a well proven project management template for design, test and final report before launching the vehicle. Each milestone has a countermeasure feedback loop of learning (Figure 9.6).

PRODUCT

-Objectives

-Specification

- Targets

Design

Test

Change Management
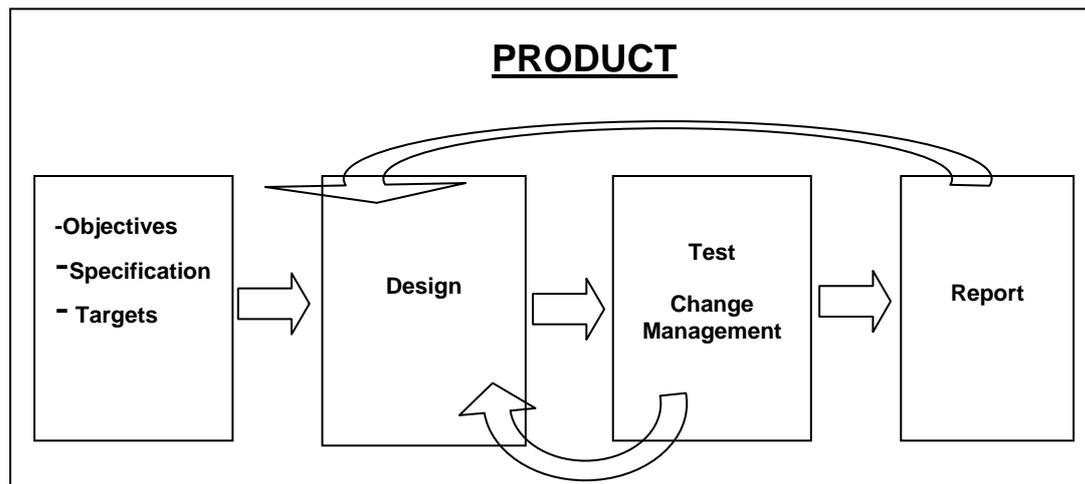
Report

Figure 9.6: Product Design and Development

In designing NTCE's organisation the company moves from the objectives and targets directly to the report. The Directors spend a great deal of time carving up or building empires and the relevant spans of control but no, or relatively little, thought is put into the design of the organisation and the implications of change (Figure 9.7). This is compounded by the fact that the organisation is usually changed twice a year, once in January and again in August.

ORGANISATION

-Objectives

-Specification

- Targets

Report
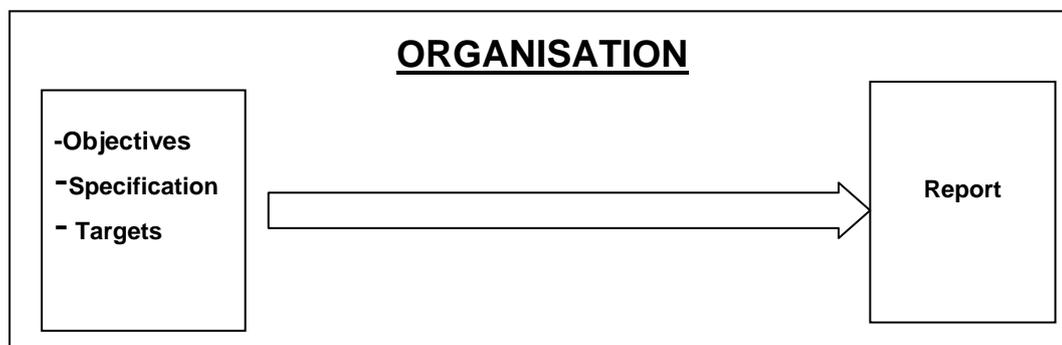
Figure 9.7: Organisational Design at NTCE.

The author proposed that product and organisational design should be approached in the same way. When designing NTCE's organisation the company should not only align global, company and knowledge management strategies (Chapter 6:137) they should follow the OAK methodology and Organise Around Knowledge (Chapter 8: 240), set up the necessary business infrastructure and then implement and manage the change with countermeasure feedback loops designed into the process. (Figure 9.8).
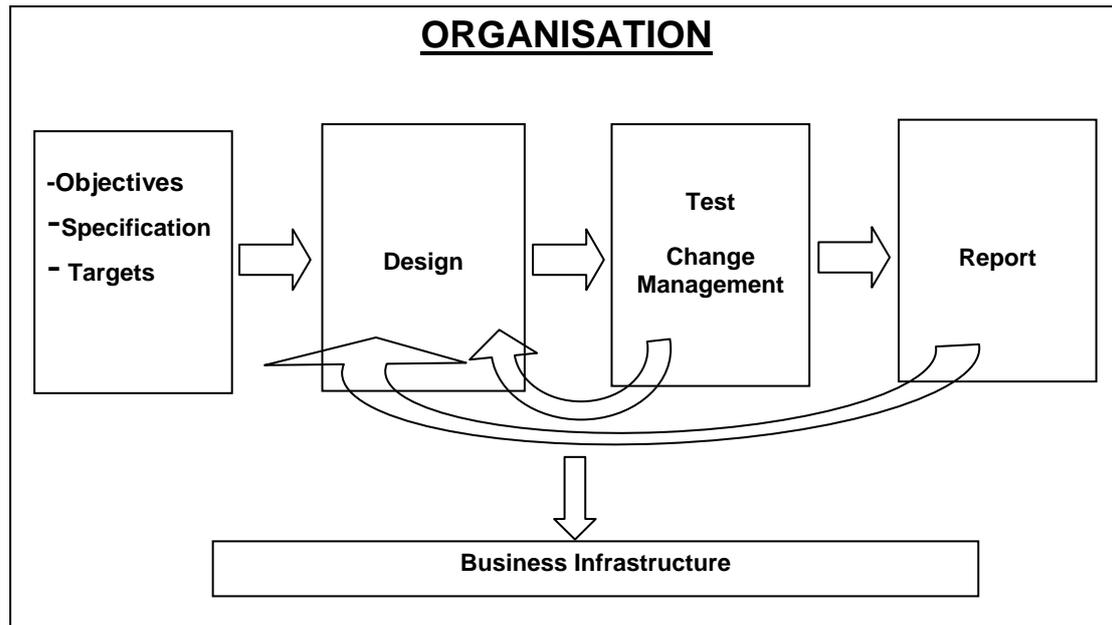
Figure 9.8: Proposal for Organisational Design at NTCE

9.5 Company Initiatives Revisited

The findings of the study prompted the author to revisit previous company initiatives that he had been involved in to a greater or lesser extent. They are COGENT, CUPID and FAST-D, all of which purported to contribute to improving efficiency, shortening design and development lead times and involved mapping processes. The COGENT Programme (from the Latin "to drive forward together") ran from 1996 to 1999 and was designed to improve the ability of first tier suppliers to co-develop designs with NTCE. COGENT aimed to raise the capability of European suppliers through the alignment of three key elements of Product development: People, Process and Products. This alignment was achieved by building awareness of the need for co-development, gaining commitment to change, identifying priority improvements and creating an environment for sustaining change (Wyatt, 2001). COGENT was viewed as a success but the methodology was dropped immediately the Company strategy became one of cost reduction.

CUPID, was about understanding the voice of the European Customer. CUPID is an acronym for **C**ustomer **U**nderstanding **P**rocesses **I**n **D**esign. It was a three-year project, made between 1999 and 2002 to establish generic processes that would improve

product attractiveness and identify and USPs (Unique Selling Points), which could be designed into the product (Burns, 2003). Workshops were held across Europe to understand how target customers used vehicles in various scenarios including commuting to work, visiting friends, poor traffic conditions, off road, high volume loading, occasional long journeys and shopping expeditions. Although the processes still exist only certain aspects of them are utilised. They have degenerated into a series of checklists, used by NTCE engineers without them fully understanding or further developing the voice of the customer.

The "Fast D" project was introduced for the new Almera launched in 1997. Fast D was an acronym for **F**ind **A** Way to **ST**reamline Development. The author was Manager, responsible for the project. It had two main aims, the first was to capture and record processes. The second aimed to reduce the number of design changes that usually happened after the design has been finalised and released for production. The methodology was based on analysing past data and pinpointing when and why the design change was made. The biggest single reason was classified as workability concerns or assembly problems. Each design change is estimated to cost £13,000 and the number of changes had run into several thousand pounds with previous vehicle programmes. It was recognised that "Right First Time" was unachievable in that late changes were always necessary to satisfy previously unidentified customer requirements. The engineers were set a target of reducing design changes by 80%, which would reduce development costs by 40% (Palmer, 2004). Once the car was launched people fell into their old ways of doing things and managers said they did not need to be micro-managed complaining that the company was already "a myriad of processes." This study has proved that thinking of the company as a "myriad of processes" was a myth and it was widely believed.

In 2000, NTCE's Deputy Managing Director launched another initiative, called reNew which was aimed at shaping the future of the company with the slogan "more than just a car." One of the author's colleagues used Cameron and Quinn's (1999) Organisational Culture Assessment Instrument (OCAI) to ascertain NTCE's organisational culture. The instrument, which is basically a questionnaire for diagnosing and changing organisational cultures is used to profile the culture as it is currently and then the same set of questions are asked to profile the desired

organisational culture, which supports the company direction. The questionnaire is based on the Competing Values Framework (Quinn and Rohrbaugh, 1983) and is a quadrant of competing values; each representing a distinct set of organisational effectiveness indicators which have been labelled Clan, Adhocracy, Hierarchy and Market (Figure 9.9).
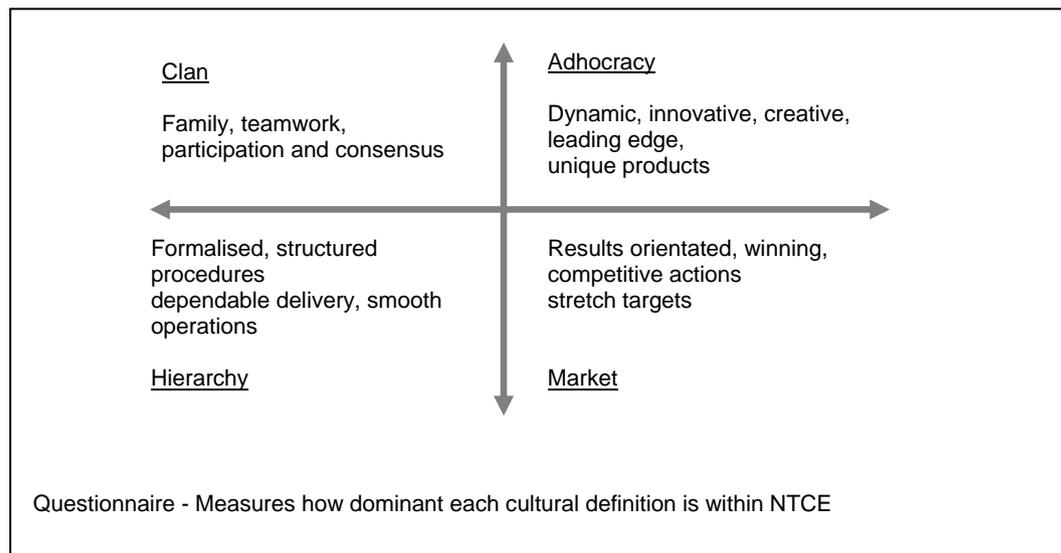
**Figure 9.9: The Competing Values Framework
(Adapted from Cameron and Rohrbaugh, 1983)**

 Thirty staff members, representing all levels from across the company were asked to complete the questionnaire and the resultant profiles plotted on the Competing Values Framework. The results from the survey are shown in Figure 9.10, the full black line indicates they believed the company had a hierarchical culture with formalised, structured procedures and based on this understanding, the Directors decided that there needed to be a cultural shift towards a more results oriented company to take the company forwards, shown as a dotted line. In the same way that Cogent, Cupid and Fast D collapsed when they lost their main sponsor, so did the reNew initiative when the Deputy Managing Director left the company shortly after the results of the survey were known.

Clan

Adhocracy

Hierarchy

Market

The decision to shift from a
hierarchical to a market
driven culture was based on
having a solid infrastructure

Now - All Staff   - - - -   Future - Directors
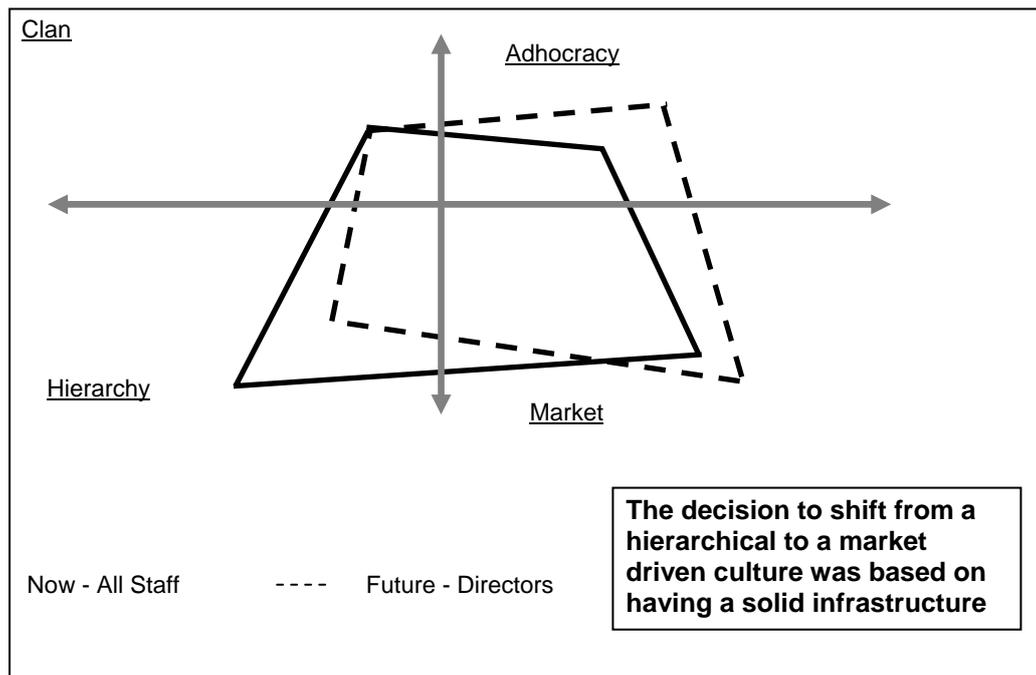
Figure 9.10: The Required Cultural Shift

In 2002, Nissan Europe conducted a pan European Quality of Management Survey to
gauge if management were following the corporate management philosophy.
Between October 2002 and April 2005 the survey was issued six times, described as
waves and looked at all aspects of management. The answers to Question 55: Is the
workforce well organised for a quality job is relevant to this study and are shown in
Figure 9.11. The full black line represents the overall response from NTCE, the dotted
line shows that of Product Development Support. In October 2002 (Wave 1), 63% of
the company believed the processes were in place. In May 2003 (Wave 3), this figure
was as high as 90% but in April 2005 (Wave 6) there was a dramatic reversal of
opinion and the figured dropped to 43%. The reason for this change of opinion is that
the company had recruited many new staff members and the lack of development
processes became apparent as they struggled to design and develop the latest vehicle
without the processes being in place.

6 Waves
Q.55 The workforce is well-organised for a quality job (smooth workflow, good methods & procedures, no duplication of effort, etc.)

Wave 1 - Oct 02
Wave 2 - Jan 03
Wave 3 - May 03
Wave 4 - Sept 03
Wave 5 - April 04
Wave 6 - Oct 05
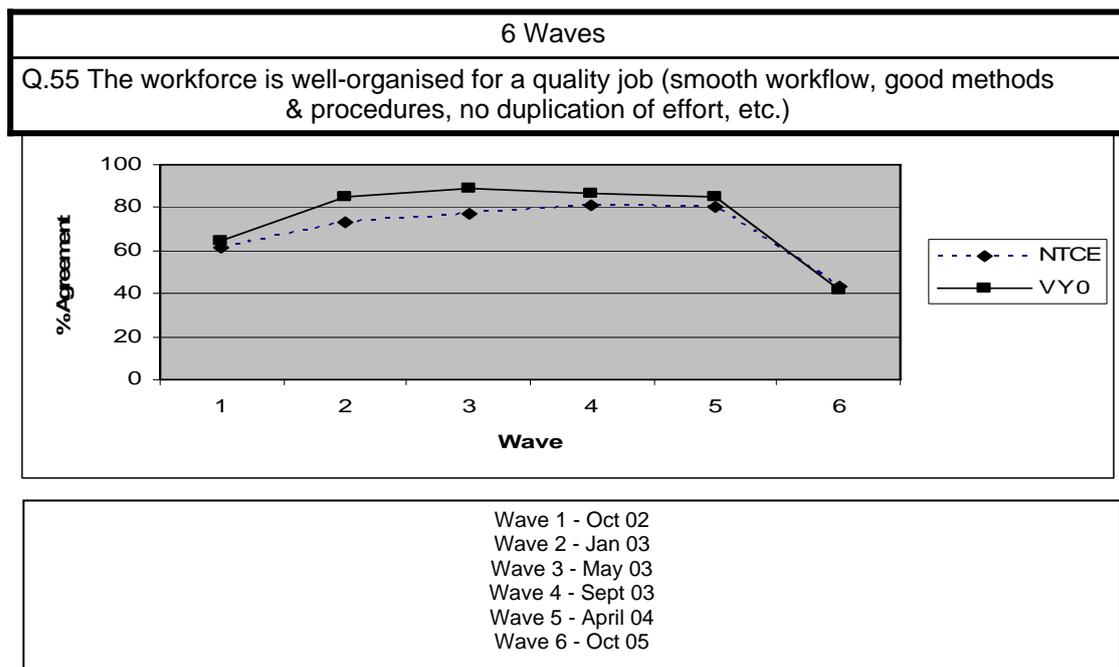
Figure 9.11: Nissan Europe's Quality of Management Survey Analysis

These results are in line with the author's study but there is still reluctance within the company to accept them as fact. The author wonders if people confuse the number of forms and reports that they are asked to make with processes. It is common to hear NTCE staff complain about form filling.

"There is a form for this and a form for that. There is a form for everything in this place. It drives me mad. All I seem to do some days is fill in forms or make yet another report for yet another meeting. It's never ending. I spend more time filling in forms than I do doing my actual job of design." NTCE Engineer

One of the reasons Managers are asked to fill in forms or ask their staff to fill them in is because it is a way that those in positions of power and responsibility can feel that they are somehow managing the situation. The author believes that this may be exacerbated in an individualistic organisational culture like NTCE especially so, when an integrated business structure is not in place.

9.6 Individualistic Cultures

Individualistic organisational cultures can lead to management ineffectiveness and sometimes, unfortunately to employee burnout (Boyatzis and McKee, 2005). They also inhibit learning and the creation of knowledge. NTCE managers are tremendously ambitious and naturally competitive and were promoted on proven track records for delivery. Most freely admit they like the status associated with the position and enjoy the perks of the job: the two cars, the pension and the private health care. Their organisational lives have evolved and revolve around meeting short term objectives. It is a paradox but they deliver in spite of organisation and do whatever it takes to get the job done. They are successful but their learning is reactive, with little time for reflection and they live in a constant state of anxiety. This activates the "fight or flight syndrome," which makes it difficult for them to stay open to new ideas and stops what Senge et al (2005) have called "deep learning." They write:

> "All learning integrates thinking and doing. All learning is about how we interact in the world and what types of capacities develop from our interactions. What differs is the depth of the awareness and the consequent source of action. If awareness never reaches beyond superficial events and current circumstances, actions will be reactions. If, on the other hand, we penetrate more deeply to see the larger whole that generates "what is" and our own connection to this wholeness, the source and effectiveness of our actions can change dramatically." (Senge et al, 2005:11)

To reinforce their positions they concentrate on goals and of doing more of the same. The danger of this is that they start to demand perfection of themselves and in doing so they become unapproachable to new or to alternative ideas like knowledge management and organisational learning. Symptomatic of this failure to adapt is "self talk" when individuals start to blame others and use the words "If only they had listened to me…". The company still gets results but often due to efforts of other talented people and unfortunately, for the individual involved this behaviour sometimes leads to burnout. One of the striking factors of this model, shown pictorially in Figure 9.12 is that it constantly reinforces itself and strengthens the attributes of an individualistic culture.

Individualistic Culture

Drive/ Competitiveness

Promotion/ Rewards/ Status

Short term Objective

Reactive Management: Do whatever it takes to get "the job" done.

"Fight or Flight"

Difficult to stay open to new ideas – Reactive, rather than "deep learning"

Concentrate on Goals

Do more of the same

Demands Perfection

Becomes unapproachable

"Self Talk" – blaming others

"If only ……….."

Get results – but often it is due to other talented people

**Model based on work by
Boyatzis and McKee (2005)**

"Burn Out"

**Figure 9.12: How Individualistic Cultures Lead to Management Ineffectiveness,
Stops "Deep Learning" and sometimes leads to Burn Out.**

What follows are two verbatim illustrating the effects of stress at NTCE. The first is
from a British NTCE Manager, who has since left the company because of a stress
related illness and the second is a comment made by a British NTCE Senior.

"It was getting too much for me. I realised it and took time off. I was worried about how people would react. It's seen as a sign of weakness. That I'm a failure but I'm not. I realised I had to do something otherwise I'd be ill or worse. I went to the doctors. He was only a young man but he spent an hour talking to me. I was worried about the people who we kept waiting but he listened and told me to rest. He told me to spend time doing what I liked. My wife was worried at first but fortunately she understood. We talked it through. I'm OK now but I recognise the signs. I realise when things are getting too much. We keep busy at the weekends. We go places. Do things. See people. I don't leave myself too much too much time to brood about what I haven't done. There is always something. But I see it in other people. The stress. Not being able to manage and not daring to admit it. I talked to Adrian about it. He said the company was preparing a course explaining what stress is and how to manage it. I've seen what they're doing but it doesn't really help. It's the culture of this place."
NTCE British Manager.

"I blame the Directors and the Managers. They don't seem to realise what's happening in this place. The pressure they are putting people under. The stress levels caused by what they ask to be done. They don't realise that not everyone is as driven as them. Not everyone is as focused. What they consider as being reasonable isn't how others see it. Look at Joe. He's off with stress and high blood pressure. In the past year he has been to the States twice and to Spain thirty times. It's killing him and then they ask him to withdraw his application for manager. What is that supposed to do to the man? It's been handled badly. I used to want to be a manager. Still would, but not on these terms. What do they expect? I don't want the crap or the politics that goes with it. It's not worth the risk to my health or the reward. Joe has spent the last eighteen months trying to prove he's worth the job and he hasn't had a life. There has got to be a work life balance. I'd rather see my daughter grow up." NTCE British Senior (Note: "Joe" is a pseudonym)

The author does not pretend that the OAK Methodology will totally eradicate organisational inefficiencies and prevent "burn out" but believes it will act as a management framework and go some way in protecting the interests and the health of all employees (Chapter 7: 188-195).

9.7 Status December 2005

In December 2005, 80 Knowledge Maps had been captured and codified and validated by the managers as being a correct representation of the processes and grouped into six "families," which correspond with time periods on the Generic Master Schedule (Table 9.7).

No	Family/Time Period	Required Knowledge Maps
1	Pre-requisites and Planning	Related to the planning stage of the vehicle programme
2	Digital lot Process	Required to provide CAD models for the digital/virtual build.
3	Test Parts	Necessary for the procurement of parts for test
4	S-Lot	Required to support the Trial Production Build
5	SOP	Required to support Start of Production Build
6	Post SOP	Required for six months after the Start of Production

Table 9.7: The Six Families

The Director of Product Development Support asked his Managers and Seniors to identify all missing knowledge maps by the end of March 2006 and to create those maps by the following August. He also asked Seniors based at Cranfield to prepare presentations about the "Success of OAK" in their section. It was a given that the OAK pilot was "a success" however, of the 80 validated Knowledge Maps:

- Each Section had modified the format as issued by the Knowledge Management Section
- 91% had not identified Key Performance Indicators.
- 30% had no timing identified.
- 26% had no tools/forms/skills identified.
- 19% had no task description identified.

These are hard facts and to the author's knowledge only four of the twelve PDS Seniors levelled their Knowledge Maps with all stakeholders, especially those outside of PDS. The emphasis was being seen to deliver Knowledge Maps on the required date rather than and than providing ones that actually mapped the job. They were still

operating on a tick box mentality. One of the Controllers also confided in the author by saying that all the maps produced on her section did not reflect reality.

PDS Controller

"It makes me angry. I was told by my manager not to say anything but he ripped the maps up we were doing and used the maps made by Spain. They were ahead of us and yes, the maps look good and he submitted them on time but it's not the way we do things in Cranfield. I thought we could do things differently as long as we understood those differences."

In the week before the seniors made their presentations, Product Development Support found itself at the centre of yet another build problem. The PDS Director called the two responsible Managers into a room to discuss the matter and asked to see the Knowledge Maps and show him where things went wrong. The Knowledge Map they produced, and for which they were jointly responsible was described by the Director *"as full of holes!"* An engineer who witnessed the meeting reported:

"It is almost as if there was an implied criticism of their management, it is the elephant in the room. Every one recognised the truth of what was being said. It was palpable but at the same time they were ignoring it because they knew it was what they should have been doing. It was how they should have been managing."

The seniors' presentations were equally illuminating in that they duly obliged with facts about how their section had improved through the OAK activity. The first Senior admitted that his thoughts had changed about OAK from negative – *"another initiative"* – to positive – *"we would have gone under without it"* – over the year. Senior Two painted a positive picture as did Senior Three who used figures to demonstrate improved efficiency. The fourth Senior outlined the benefits without emotion and Senior five raised "Care Points," which could only be seen as being reasonable although others may have shown them as negative outcomes. The sixth Senior presented slides made by one of his staff and it showed. He was not particularly "au-fait" with the content and the impression he gave was that OAK was part of a job he already did and that his job, and the job of his fellow professionals

was too complex to map. At the end of the presentations the Senior, who had been first to speak held back. He obviously had something on his mind. He hesitated before asking if he could present a light hearted poem he had written about OAK. The poem, reproduced here in full, speaks volume about his true feelings. The author has boxed the underlying message against the relevant verse for reference.

Note:

- Derwent House the name of the building from which PDS operate in Cranfield.
- Dave refers to the Director of PDS
- JT/John is the author.

The Poem:	Underlying Message:
A while ago in Derwent House *Drinking coffee on the landing* *Dave was pondering where we are* *And of processes outstanding*	Managers drinking coffee – not working – pondering – not working! Whilst the workers were toiling/noses to the grindstone
He thought of the additional work *And PDS staff movements* *And all the things we had to do to make process* *improvements*	Injected workload. Not additional staff Is this a recognition that processes need changing?
He thought "although we manage well and meet *the business need"* *There must be something we could do* *In order to proceed*	We already meet the business need so why change?
So off he went to see JT *To ask of his advice* *"Well to tell him what he wanted* *Just to be precise"*	Direction from the top!
I want a plan, I want it now	

He put John on the spot *I want some formal method* *To show me what we've got.*	Use of the word "formal" suggesting the poet believes that the informal – way we do things around here –is not valued/not respected Acknowledging the role of Knowledge Management
So off John went to read his books *And look for inspiration* *And there on page 473* *Was knowledge map creation*	"Out of books" A reference to theory and not practice…Also implies that the author had to scramble around for half baked ideas.
Then John went all proud and smug *To tell Dave what he'd found* *And explain the KAIZEN process* *Was the thing to spread around*	The author running to the boss Reactionary. He was questioning why other Directors had not adopted the methodology
We'll roll it out in PDS *Dave said with obvious glee* *"I want it working by the year end* *Or they're answerable to me."*	Answerable to the boss! Worried about failure. Worried about blame
So John set up the kick off *To explain the way to go* *But answers to our questions* *He really didn't know*	The impression that the method was not thought through. Management was an ass!
But every Tuesday without fail *From our normal work were torn* *To sit around our table* *Till a knowledge map was drawn*	Torn from our work to make Knowledge Maps! As if they had not better things to do! The workers had fulfilled their side of the bargain. Any failure was the result of management and the knowledge management section
We'd look at all the problems *And the "Cock Ups" from the past* *And create a working process* *That was written down at last*	An admission there had been mistakes and the process did need capturing

But then at the Seniors' meetings *We'd present our knowledge tool* *To be told that what we'd done was wrong* *They'd changed the bleedin' rules*	Again: Incompetent management!
It wasn't only knowledge maps *They wanted us to fill* *But mission statement, mindsets* *And matrices of skill*	Again: Incompetent management and more injected work load.
But still they couldn't break us *We continued with our quest* *Despite the rising workload* *We wouldn't let it rest*	Them against us. Management versus the workers!
Doggedly we grafted *To support the boss's whim* *We drafted maps and mindsets* *But there was no pleasing him*	A determined workforce? Beasts of burden? A whim? Still a reluctance to accept a new way of working. Suggests the strategy was not planned A hard taskmaster?
Just when we thought we had them right *We took them out to Spain* *But found they did things differently* *So we had to start again*	Incompetent management. Why was Spain not involved from the beginning?
With weeks of frank discussions *Listing everything* * We know* *We eventually reached agreement* *And had a common flow*	Success through the efforts of the workers and not management.
As time went by we realised *That our output had improved* *Our standard jobs ran smoother*	Slow realisation about the benefits of change

And "no value" ones removed	
But what had made is better *In the work we do each day* *And what had made frustration* *And confusion go away?* *(Poetic Licence)*	
We looked around for answers *Then it became quite clear* *The stuff that we had moaned about* *Earlier in the year* *Had actually been well worth it* *And was starting to succeed* *In giving us direction* *To the way we should proceed*	An admission that the OAK methodology was working
So if you see John Temple *In a room with Dave someday* *Be certain of the outcome* *More work will come your way!*	Final dig. Managers talk but it is the workers who deliver.
Senior Engineer *December 2005*	

The poem is British banter at its best with side swipes at management inefficiencies and at how they, "the boys sorted it out." The underlying message is that success of OAK is through the efforts of the workers and not management. The senior, once a detractor is now a convert to OAK. He was slow to realise the benefits of change and the necessity for OAK. He sees the need for it because it benefits him but more importantly, he accepts it on his own terms. He acknowledges the meetings the author has with the Director as being "planning" and will result in "injected work" for him. He also acknowledges that the author use "books" to make his case but he values

hands on pragmatism over theory and implies that the author has to scramble about for ideas. Theory has no place in his world.

The conclusions of the OAK "Kaizen" pilot activity run in Product Development Support between August 2004 and December 2005 is that:

- Knowledge management at NTCE is about organisational efficiency
- Organisational efficiency depends on an organisation, strategically designed around knowledge. This knowledge is twofold:
  - Knowledge which is crucial to the future of the business
  - Knowledge of organisational culture.

The author also concludes that organisational structures must reflect that different cultures need managing in different ways and that may change over time. At this point in time, Product Development Support needs:

- Strategic, directive leadership and management
- A consistent message
- Chain of command
- Discipline at every level
- Standards.

Organisational efficiency also depends on a leadership that allows for the design, development, implementation and management of culturally sensitive frameworks, structures and mindsets which focus on the business. The OAK Methodology is a framework for a learning organisation. Whereas knowledge management is primarily concerned with the capture, codification of knowledge and the exploitation of people's experience by developing better tools and methods. The creation of a learning organisation emphasises culture management and leadership to harness the learning capability of the organisation so it is perhaps no surprise to see that PDS staff members say success of the activity depends on strong Leadership, Management and Professionalism. A learning organisation considers knowledge as embedded in

organisational routines, culture and languages. A place where reflexivity is the norm and where:

> "People continually expand their capacity to relate the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning how to learn together (Senge, 1990:3)

NTCE has a reactive and fire-fighting culture with people regularly pulled off jobs to sort problems. The Company revolves around the Directors and Managers, not as facilitators but as authoritarians who are the focus of power and where all interactions within the group move towards them. Blake and Mouton (1964) found that people in managerial positions usually have a dominant management style, which has been determined through personal history and values and the organisation itself. This authoritarian or autocratic style of management is the result of a control organisation where individuals have been judged and promoted for the way, and speed at which problems are resolved and control reasserted. There is a belief that any error is avoidable through managerial controls hence the reliance on Key Performance Indictors. The Directors and Managers may have openly pledged their support for the OAK activity but their staff are watching them and are waiting to be led, waiting for signals to tell them what their management team really believes is important to the company. Culture management, in this sense is about message management.

> "Culture is about what is really valued – demonstrated through what people do, rather than what they say. When the "walk" and the "talk" do not line up, it's the "walk that shapes the culture." (Taylor, 2005:7)

This study has provided a Methodology for Organising Around Knowledge. It has also identified how Product Development Support needs to be managed, where management needs to focus its attentions and the affirmative feelings it needs to foster in its workforce to successfully implement and sustain OAK. These four pillars: PDS Management Way, OAK Methodology, Management Focus and Method of Delivery need to be understood in a cultural context and styles of leadership and management should emerge out of that understanding. Work to integrate these four pillars and

develop a Model for Organisational Efficiency is ongoing and outside the scope of this thesis.

PDS Management Way	OAK Methodology	Focus	Method of Delivery
Strategic directive leadership and management A consistent message Chain of command Discipline at every level Standards.	Knowledge Strategy Knowledge Mapping and Mindsets Knowledge Promotion	Leadership Management Professionalism Authority Entrepreneurship Teamwork	Recognition Respect Trust Support Safety Relationships

Table 9.8: Model for Organisational Efficiency.

9.8   Conclusions

The chapter has described Phase Two of the Study to Organise Around Knowledge (OAK) and shown that the author needed to revise his research methodology to establish how people needed to be managed for the efficient management of knowledge. He also revisited, reconfigured and justified his findings based on both subjective and objective data. He also realised in writing this chapter that any initiative within Nissan needs a high level sponsor to implement it because Nissan employees of whatever culture or nationality are waiting to be led, waiting and watching for signals to tell them what their management team really believes is important to the company. The creation and management of knowledge is driven by a need and in organisations that depends on those in positions of power either creating that need in others or by making them deliver. It also reflected on the key findings of the study and shows how organisational cultures can sometimes become dysfunctional. This chapter made the following theoretical and practical contributions to knowledge.

9.8.1 Theoretical Contributions to Knowledge

- NTCE business infrastructure is not integrated.

- NTCE has a reactive and fire-fighting culture with people regularly pulled off jobs to sort problems. The Company revolves around the Directors and Managers, not as facilitators but as authoritarians who are the focus of power and where all interactions within the group move towards them.

- This authoritarian or autocratic style of management is the result of a control organisation where individuals have been judged and promoted for the way, and speed at which problems are resolved and control reasserted. There is a belief that any error is avoidable through managerial controls hence the reliance on Key Performance Indicators.

- Global Nissan does not have a strong corporate culture. Nissan was not influenced by a founder's philosophy, policy, or image. At one level this gave Nissan Directors the freedom to direct as they chose. It also meant that top management positions were open to all employees who were motivated enough to be interested. However, the absence of a strong philosophy or visible embodiment of the founder makes it difficult to unite the whole company, provide a clear sense of direction and keep the company moving forwards causing the company problems.

- In NTC best practices, lessons learnt and processes are "offered" to managers. They are not enforced and standardisation is not obligatory. Managers are charged with delivery but how they deliver is their responsibility. The onus is on the individual to deliver at all costs which leads to competition and a silo mentality, all of which are "delivered" within the framework of a collectivist culture.

- In NTCE, Western Managers interpret the sense of respect and responsibility within an individualistic cultural framework that also leads to competition and silo mentalities that manifest themselves in a different way but in both instances it is about "self."

- For NTC Japanese managers, "self" is negotiated through their obligation-orientated relationships with others, for NTCE Western managers, it is also negotiated but out of the necessity of circumstance rather than the obligation of relationships. It follows that negotiating self through relationships is

supportive and leads to a long term view whereas negotiating self out of the necessity of circumstance is relatively short term.

- Knowledge Maps are formalised, codified structures mimicking relationships found in Nissan Technical Centre Japan.

- Organisational cultures can become dysfunctional.

9.8.2 Practical Contributions to Knowledge

It would be useful for researchers and practitioners to

- Understand how the absence of a strong philosophy or the visible embodiment of a founder has on corporate culture and vice versa.

- Understand how "self" is negotiated in a cultural context and how that impacts organisational behaviour

- Recognise that organisational cultures can become dysfunctional

The next chapter opens Section Four of the thesis and debates the future of knowledge management at Nissan.

Section Four: The Future of Knowledge Management at Nissan and Conclusions to the Study

Chapter Ten

The Future of Knowledge Management at Nissan

10.0 Introduction

This chapter opens Section Four, it begins with a global overview of Nissan's business at the time of writing; continues with a debate about the future of knowledge management within R&D and shows how and why, in the context of current changes the OAK Methodology is becoming more widely accepted at NTCE

> **SECTION FOUR**: The Future of Knowledge Management at Nissan and Conclusions
> **Chapter Ten: The Future of Knowledge Management at Nissan**
> Chapter Eleven: Conclusions; Contributions to Knowledge Management within NTCE and implications for further study.

10.1 Global Nissan

Nissan's CEO, Carlos Ghosn was probably the key catalyst for change at Nissan. He has led the company back from the brink of disaster and shown the remarkable results that suitably motivated and rewarded people can achieve in a relatively short period of time. In April 2006, Nissan announced its sixth straight year of record profits that rose by 1.2 per cent to approximately 2.32 billion euros. The Nissan Renault Alliance is now the fourth largest global automobile maker having sold 6.1 million vehicles in 2005, Nissan, alone sold 3.5 million vehicles (Figure 10.1). In 2007, Nissan plans to launch nine new vehicles worldwide and has recently announced a strategic tie up with Suzuki Motor Corporation, to jointly develop new vehicles and to use each other's manufacturing facilities, especially in emerging markets such as India. It is an

amazing story of recovery and is sure to be a text book case for business schools
worldwide.

FY05 Sales performance
Global retail sales
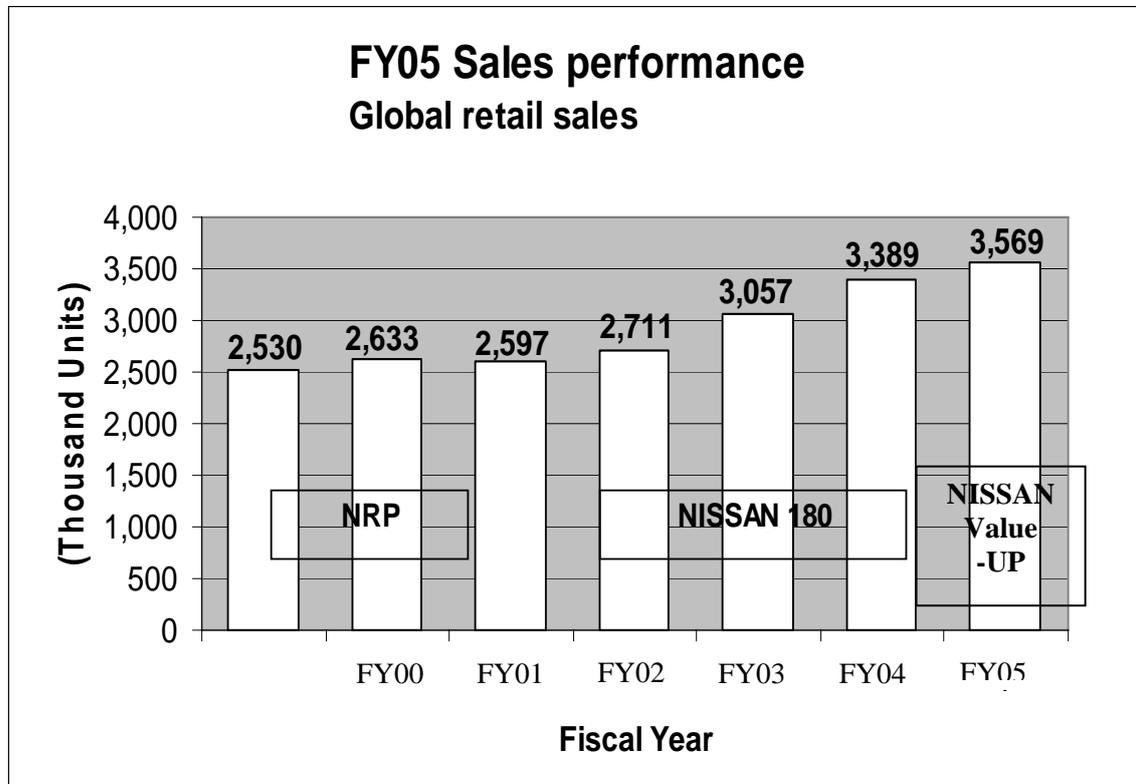
Figure 10.1: Fiscal Year 2005 Sales Performance – Internal Nissan Report.

In April 2006, Ghosn announced plans to invest $200 million in a new assembly plant
in St. Petersburg, Russia. The plan is subject to the approval and signing of an
agreement with Russia's Ministry of Economic Development and Trade but when
fully operational, the plant will employ around 750 people with a currently planned
capacity of up to 50,000 units per year. The plant will produce a variety of vehicles
specifically adapted for the Russian market.

Nissan is not alone in looking to expand in Eastern Europe. Snyder (2005) reports
auto production is booming in central and Eastern Europe. Production is expanding in
already established factories in Poland, Romania, Hungary, Slovakia, the Czech
Republic, Slovenia and the Ukraine and new plants are about to open or are under
construction in the Czech Republic and Slovakia. In Western Europe, the picture is
bleak; plants are making production workers redundant and reducing capacity.
Automakers are now planning to build the next generation of some new cars in

Eastern rather than Western Europe. In 2005, both the Jaguar and MG Rover plants in the UK closed. Between 1999 and the end of 2003 western auto makers reduced their 1.12 million workforce by 5.6 per cent (59,175 workers). The shift east is not unique to the automotive industry, less than 15 per cent of jobs in Britain today are in manufacturing. Nissan is also considering off-shoring activities in order to improve efficiency and reduce costs. The company faces tough targets to maximise opportunities and reduce costs – 14 billion yen in 2006 -   and is, or is planning to off shore jobs to low competitive countries including Hungary, Romania, Egypt, Vietnam, Mexico, Thailand, India and China.

The drive to offshore production has been triggered by lower wage costs, which are typically 50-60% cheaper in Eastern Europe, 75% cheaper in India and 80% in China. China is the world's top location for contracting out manufacturing, workers are well educated in basic computing and mathematics skills and although they are said to lack creativity they are disciplined, readily trained and good at doing tedious jobs with repetitive, rules based tasks like data entry, form processing and software testing. India continues to dominate higher value functions such as research and design which require greater creativity and language skills but when businesses need finely tailored products, delivered quickly and flexibly then Eastern Europe scores highly.

Saul (2005) argues that "globalisation" and the promise that economies and not politics or arms would determine history have failed to materialise. He pictures a world where governments are reasserting their national interests and cites the USA ignoring international critics and Europe's reaction to problems of immigration, racism and terrorism as examples of renewed nationalism. He writes about the collapse of globalisation, the decline of competition and the return towards monopoly and oligopoly.

> "The most common themes for a quarter of a century have been cost reduction, most often stripping out the structures of employee stability. Both of these are about profit retention, selling at the cheapest possible price in unstable markets with the aim of destroying smaller competitors; selling at the highest possible price in other areas where there are already elements of oligopolistic combines in place." (Saul, 2005:176)

In an interview with Automotive news in January 2006, Ghosn advised struggling automakers to cut its workforce sooner rather than later. He talks about money being the scorecard and people being the objective. He claims people are a company's main asset and add value only if they are motivated and properly managed but management has to make tough decisions to ensure the company remains in business. He said:

> "The score card has very simple terms. It's net income. It's return on invested capital. That's the law. Unfortunately, human society still has not figured out a better system than this one to create value. By acting too much in advance, you're weakening your people's motivation. But if you wait too long, saying "I'm people oriented I'm not going to do what the job requires me to do." Well, that is the Nissan story before 1999." (Treece, 2006:10)

However, he does not underestimate the importantance of a committed workforce. In his Fiscal Year 2006 Message, entitled "The Power of Nissan Comes from Inside," Ghosn praises Nissan employees for their efforts in achieving the Nissan 180 commitment – the one million additional sales. The speech was a testament to the importance of organisational culture but in thanking people, he is also reminding them that the business is paramount. It is not about employees' welfare and a feel good factor; it is necessarily about shareholder value, competition and organisational survival.

> "Our strategy was effective only because it engaged the latent power of Nissan's culture. The conclusion I draw from this experience is that corporate culture is the key driver of value creation in this age of globalisation. Tangible corporate assets have a certain break up value. But to create additional value with these assets you need motivated employees. Such motivation can occur only on a wider scale in a healthy and dynamic corporate culture." (Ghosn, 2006)

Ghosn's strategy, as already explained (Chapter 5: 107) is driven by an elite core of individuals who have much to gain and everything to lose. It is a long term strategy for the company based on the extraordinary efforts of individuals. It will be interesting to see if the Japanese allow this to continue. The author has already heard rumblings of discontent from senior Japanese colleagues.

"Burn out not only happens in the west. We are now seeing it happen in NTC. All Ghosn is interested in is cost. In financial performance. How far can you go with it? There is no thought for people. No sense of responsibility for people." NTC Japanese General Manager

He actually means a sense of responsibility for the welfare of people as a collective and not for people as individuals. It is the benevolent Confucianism, rather than compassionate Buddhism. It is about extending care to others. For the Japanese, the welfare of the group is paramount and exceeds the needs of individuals. Initially, the collective was a "cultural strength" of NTC with its consensual decision making, long hours of work, attention to detail and the tribal allegiances but over time these same strengths became its weakness. Senior management at NTC recognised these weaknesses but were unable to rectify them and, as with previous times in the country's history, they were prepared to learn from "outsiders" and duly formed an alliance with Renault, which arguably kept Nissan in business. The evidence suggests that Ghosn has purposely been allowed to operate within a "gaijin bubble" (Chapter 2: 18) of his own so that the company learns a more competitive style of man agement more suited to the twenty-first first century. It would be interesting, for future researchers to investigate what remains of the Ghosn legacy, or rather how that legacy, which pitches the needs of the individual against the collective has been assimilated into the organisational culture.

10.2 Knowledge Management at Nissan Technical Centre Japan

In Chapter Five the author mentioned that Nissan has Knowledge Managers in each of its technical centres, although the scope and role of each manager is different depending on the location. The Manager in Nissan Technical Centre North America who had a role similar to the author and covered all aspects of knowledge management left the company and his work was not progressed. In Nissan Technical Centre Japan, there is still a Manager responsible for Knowledge Capture and Sharing and another responsible for Knowledge Creation. The author has been unable to contact the manager for knowledge creation but at the same time that he was

developing his strategy for Organisational Efficiency and Knowledge Management, his Knowledge Sharing colleagues at NTC had also been busy.

They had concentrated on developing the aforementioned WIN Portal (Chapter 2: 33) and writing job procedures. The stated purpose of the job procedure is to improve efficiency, job quality and the transfer and storage of knowledge. They have employed a team of technical writers, called them knowledge engineers, and set them the task of interviewing nominated experts and creating job manuals which are aimed at new starters and mid career scout personnel (Chapter 4: 83) and are divided into seven levels (Table 10.1).

Level	Category	Name of Level	Summary	▪ Purpose
1	Job flow-chart	Job flowchart outline	Documents describing the general description and position of the target job, and output on main phases in the overall vehicle development process	▪ Understand the general description of the target job in the target department and the position in the vehicle development process.
2		Job flowchart	Documents describing the job flow (job to be implemented, implementing department and flow of job) for the target job	▪ Understand the job flow for the target job. ▪ Understand major output as job result. ▪ Understand the time required for job flow.
3		Job flowchart detail	Documents describing detailed job flowchart and steps in the own department for each job of the "Job flowchart"	▪ Understand the job flow of the target job in the target department and the person who implements it. ▪ Understand the information required for the job, and output of the job.
4	Job Procedure	Job procedure outline	Documents describing further details of the job in "Details of job flowchart drawing"	▪ In the target job, understand the general description of job requiring a detailed explanation. ▪ Understand the information required for the job and the output of the job.
5		Job procedure detail	Documents describing further detailed steps for each job step are shown in "Description of job procedure"	▪ Understand the steps of the job requiring a detailed explanation of the steps in the target job. ▪ Understand the detailed information required for the job and the output of the job.
6			Documents describing the further detailed explanations and terms of "Details of job procedure" as required	
7	Others*	Job flowchart (Meetings)	Documents indicating the general description of major meetings, schedule and items, etc. to be submitted in the overall vehicle development process	▪ Understand the agenda and the schedule of major meetings, etc.

Table 10.1: Structure of Nissan Technical Centre Japan Job Manuals

(Showing Seven of the Eight Levels of Detail)

Nissan Technical Centre's Job Manuals have been developed to explain the processes required in designing any of the major systems in a full vehicle development programme. The job procedures can contain up to eight levels of detail (Table 10.1). The first three levels (Job flowchart) define the activities that need to be carried out and the duration of time between the major milestones. Each level gives more detail than the last: Level 1 shows the whole development schedule, Level 2 provides an inter-relationship of the activities occurring within each development phase and Level 3 gives an overview of the inputs, outputs and roles associated with one process. The next three levels (Job procedure) provide progressively increasing detail on how to do the process, including the time (in man-hours) that each activity should take. Level 7 is used to describe the major meetings that should happen to support the development of a vehicle and finally, Level 8 is used for any other supplemental information.

NTC have also used IBM advisors and the job flows or processes are shown horizontally and look similar to the previously discussed formats promoted by Business Process Re-engineering. (Chapter 1: 4). At the end of 2005, the company had produced ninety manuals, which came as a complete surprise to the author. Twelve of those manuals have been translated into English and sent to NTCE and are, at the time of writing with the relevant sections for appraisal. Given that the author has regularly updated his knowledge sharing colleagues in Japan about his study and developing knowledge management strategy it seems strange he was not aware of the direction they were taking. His only explanation is that he, and his section were allowed to operate in a "gaijin bubble" so that NTC could learn from them. There has been no directive from NTC to follow their lead and adopt their standards; NTCE is allowed to manage its own business. Currently the author is aligning the NTC and NTCE methodologies and trying to understand what is happening. At first glance the manuals are impressive but closer examination reveals that they:

- Contain only basic technical specification.
- Are design-centric – 'silo mentality',
- Are designed to bring everyone to the same basic level,
- Are task-based – do not encourage understanding of why we do the job,
- Are not designed to promote deeper learning or raising technical capability.

The manuals are not about learning and certainly not about standardisation. For the twelve manuals the six vehicle phases have been described differently (Table 10.2). The author asked the Senior Vice President of the Company, and the man ultimately responsible for Knowledge Sharing and Creation in NTC about his plans for updating the manuals. His response was enlightening:

"Of course tomorrow they will only be perhaps 98% accurate and next week 90% accurate. It is very difficult to keep them up to date. The way we do our job is always changing." Senior Vice President – NTC

No.	Procedure name	Phase 1 Preparatory Phase	Phase 2 Examination of Specification / Sourcing	Phase 3 Examination of Design	Phase 4 Production Design Release	Phase 5 Prototype Vehicle Build	Phase 6 Production Preparation
1	Monotsukuri Policy Meeting	Before concept Monotsukuri Policy Meeting	Before Profile Monotsukuri Policy Meeting	Before contract Monotsukuri Policy Meeting			
2	Progress Meeting	Preparation and implementation of #1 Progress Meeting	Preparation and implementation of #2 Progress Meeting	Preparation and implementation of #3 Progress Meeting	Preparation and implementation of #4 Progress Meeting	Preparation and implementation of #5 Progress Meeting	Preparation and implementation of #6 Progress Meeting
3	Eng Project Management	Unit family concept planning	P/T Concept review	UD-Lot	UC-Lot	Production Design Release	After production design release
4	Front End Module	Preparatory study	Examination of spec/Sourcing	Examination of Design plan and styling	Production Design release	Prototype vehicle	Production preparation

Table 10.2: NTC Job Manuals Phases 1-6

The manuals are not a half hearted and failed attempt to codify the company's knowledge but a deliberate ploy to control the new starters and mid-career scouts. It tells them who the company recognizes as the subject matter expert and introduces them to the subject with a basic level of knowledge and then expects them to learn through building a relationship with the subject matter experts. If they fail to perform or conform to the group norms then access to the knowledge they need to do their jobs and forward their careers will be denied. These relationships of obligation hold NTC together. It is the same strategy the company employed when writing the original

Nissan Engineering Manuals. It is history repeating itself, a cultural pattern of reinforcing obligations (Chapter 5: 114).

In January 2006, Yamishita san, Executive Vice President of Nissan Global Research and Development made a speech in which he introduced the concept of "Meisters," or subject matter experts to the company. He admitted that Nissan had made a mistake in the past by making experts redundant and recently, for the first time in the company's history "Meisters" are now acknowledged as experts in the organisational tree. Knowledge writers are also shown as belonging to the design organisation, highlighting their importance to the company. The Meisters are the guardians of quality and the arbiters of company truths. They set and maintain the standard, not only of a way of working but also the mindsets. Masuzawa (2001) argues that Japanese employee training is strongly related to "norm acquisition", i.e. not teaching *how to* (skills) but teaching *act standards* (norms). He believes that the Japanese think of their seniors as mentors rather than trainers and job descriptions are not thought of as business manuals but as ethical codes.

The answer to the Managing Director's question as to how the company raised the standard of its Design Reviews is to enforce discipline and promote learning at NTCE. NTC engineers are culturally indoctrinated to think deeply, they are expected to understand the detail, whilst a NTCE engineer's learning tends to be reactive and linear, both forms of learning are reflections of different organisational cultures. NTCE engineers react to problems, one action leads to a counter action with shallow, loosely linked thoughts. Problems are solved quickly but the depth of thought is sometimes lacking. They are prized for getting the job done. It is a competition to see who can do what and indicative of an individualistic culture. Individualistic cultures gain self-respect through competition, which ultimately demonstrates the individual's uniqueness and separateness from others. In collective cultures, employees are able to achieve self-respect through service within the system. They are rewarded for dedication and compliance. In NTC engineers have been programmed to think more deeply. Their understanding is regularly challenged through the learning process. Senge et al. (2005) argue that learning is the integration of thinking and doing, if people's awareness never progresses beyond a superficial understanding of events and current circumstances, actions will be reactions. If the capacity to learn is deepened,

the source and effectiveness of their actions can change dramatically and a new truth emerges (Figure 10.2).
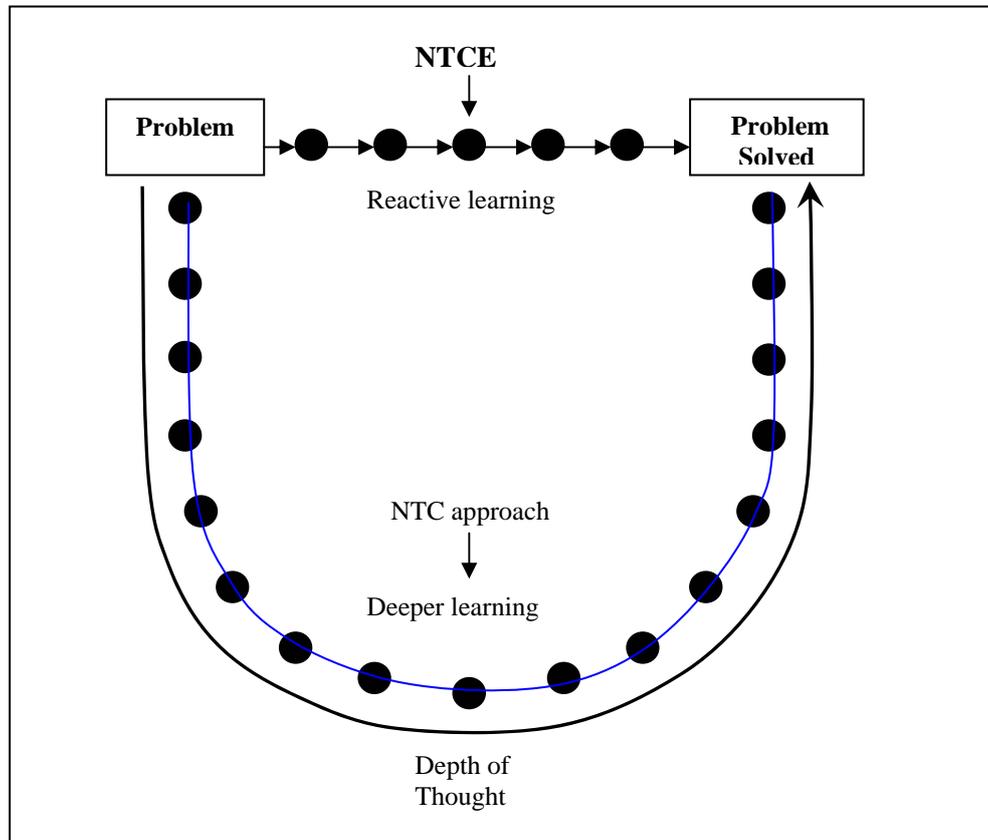
Figure 10.2: Different Approaches to Problem Solving

An interesting organisational and cultural by-product of this standard of training is a more efficient use of time. A Japanese Manager commented that his British counterparts always spent the first part of any presentation justifying their positions.

NTCE Japanese Manager

"It is always the same, when British managers make a presentation they spend the first fifteen, twenty minutes justifying why they are doing what they doing. It wastes so much time. Why do you have to do it? This is your job. You are the expert."

The study suggests that British Engineers fear individual criticism and are constantly on the defence (Chapter 8: 210) and indeed, the main argument of this thesis is that national culture is so invasive and influential on organisational culture that it can

become dysfunctional in a global organisation. The "way we do things around here" is a powerful mechanism by which people value themselves and build their identities. Rather than try to homogenise cultures, the aim is to create structures which maximise the different cultural strengths and create agendas for dialogue which, longer term will help build relationships, understanding and empathy. The author is pragmatic enough to realise he is not going to change cultural mindsets. "Managing within the cultural restraints of the company" means recognising and understanding the history, background and implications of the patterns of interaction operating within the company and designing frameworks which minimise misunderstandings and facilitate learning.

Patterns of interaction are culturally ingrained to the point where they are difficult, if not impossible to change, and any attempt to do so, at an organisational level is futile. Although individuals can be swayed by the logic of an argument it does not necessarily mean they will alter the way they behave because people, at different times in their lives, depending on their lives, culture and experience are motivated by different things and in different ways. Births, deaths, marriage, illness, divorce, separation impact our ever changing lives. Is it reasonable or indeed realistic to expect everyone to be as committed to the company as the Global executive team? One middle aged senior engineer said although he wanted to do a good job, his biggest joy was to be on the golf course twenty minutes after he finished work at 5pm. He said:

"Once, I had a career. I was here all hours. It's not worth it. Now I have a life."

10.3 Knowledge Management at Nissan Technical Centre Europe

In the first two months of 2006 the author made three separate presentations, two in the UK and one in Spain to all staff that worked in Product Development Support and had been involved in the pilot. In March 2006 he presented his findings to the Managing Director of NTCE. This was in the week before the MD, who had been the main sponsor for the study left the company and returned to Japan. To recap, the study began when the Managing Director posed these three questions (Chapter 1: 6-9)

How do we use Knowledge Management to raise the capability of the company – the spiral up of knowledge?

Does culture impact the way in which we manage different nationalities?

How does the company facilitate "bottom up" thinking?

The Managing Director said the author had answered his questions and he was very pleased with the study; he even mentioned knowledge management in the farewell speech he gave to the company at the beginning of April, 2006.

"Now I'm going to refer to something special, it's Knowledge Management. In line with our capability improvements, I feel that Knowledge Management is very much important to expand our use of knowledge and to transfer this existing knowledge to NTCE and we are now creating our own knowledge and transferring it onto other colleagues, in other regions. So Knowledge Management is very much important not only now but for the future, and I analyse that NTCE is very much or has a very good opportunity or potential to lead this Knowledge Management and processes onto global R&D".

NTCE is currently debating its own future. What is its unique selling point, what value does it add to global Nissan? NTCE opened an office in Moscow in October 2005 and will open another in Western Germany in July 2006. Both these locations have been established to deepen the company's understanding of customer needs. To paraphrase Drucker (1954): "What is our business? Who is our customer? What does the customer consider of value? The author has just kicked off a study to understand if the meaning of quality is culturally mediated, or how much does culture affect how people value quality. These are interesting pointers for the NTCE's future direction. Much of the work the company does now could be, and will be done cheaper elsewhere in the very near future. NTCE is also proposing to establish and manage Nissan India Design and Development Centre and its justification is based on:

1. Language: English is the most used business language in India.

2. Culture: India was part of the British Empire; there is a strong cultural link between the UK and India.

3. Foreign Service Assignments: The Company proposes to second people to India to manage the Centre.

4. Communication Infrastructure: Use Nissan global IS / IT tools e.g. WIN, Space Vision, G2B etc. Establish Communication room (s) with 'Smartboard', TV meeting and iMeeting capability.

5. Processes / Key Performance Indicators: All processes to be clearly defined with clear roles and responsibilities between the UK and India.

The OAK Methodology is key to the NTCE's strategy for setting up and managing the Indian operation and to progress matters the Director of Product Development Support has seconded a small team of experts to the knowledge management section to progress OAK activities. These people report directly to the author, there are no dotted lines of dual responsibility. Perhaps, not surprisingly these people have been nicknamed, "Acorns," "Oak Saplings" and even "Tree Huggers." (Figure 10.3). In line with the OAK Methodology this team of subject matter experts have been given the following objectives:

1. To Improve PDS efficiency by continuing to implement and sustain the methodology to Organise Around Knowledge.

2. To define and create the standard of a generic OAK model that can be used across Global Nissan.

The author has been given the responsibility to roll out the OAK methodology across the NTCE and then to use and adapt the models he has developed throughout this study for use and the transfer of knowledge to India.
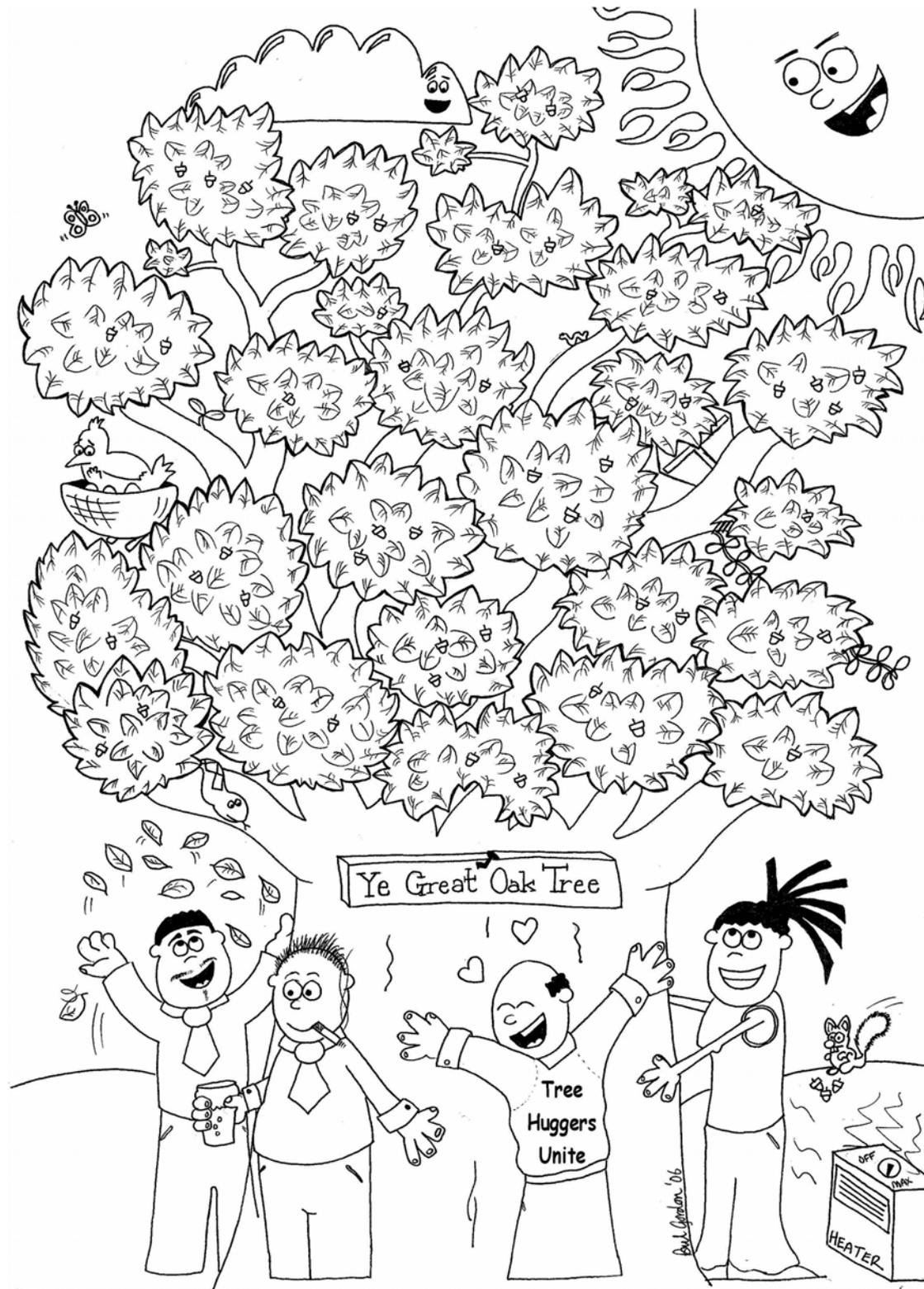
Figure 10.3: Tree Huggers Unite

The author also proposes to develop a tool or model to classify the Knowledge Maps. The model will use Davenport's (2005: 27) classification structure for knowledge intensive processes as its base (Figure 10.4). The author proposes to categorise the tasks on the knowledge maps by developing a standard glossary of key words which must be used when describing the task. The tool for knowledge classification will be designed to search the maps for these words and automatically categorises them. This information can be used for analysis: what is value added, what is non-valued added and what jobs can easily be off-shored with minimum risk to the company.

Davenport argues that many companies fail to maximise the productivity of their knowledge workers because they try to manage everyone in the same way. The author supports this claim. It is clear from the results of his study that management styles can block learning and the effective use of knowledge. Davenport identifies four categories of knowledge workers – transaction, integration, expert and collaborative workers and proposes a framework for matching each category with management strategies.

	Integration model	**Collaboration model**
Level of interdependence	• Systematic, repeatable work • Reliant on formal Processes, methodologies, or standards • Dependant on integration across functional boundaries	• Improvisational work • Highly reliant on deep expertise across functions • Dependant on fluid deployment of flexible teams
	Transaction model	**Expert model**
	• Routine work • Reliant on formal rules, procedures, and training • Dependant on low-discretion workforce or information	• Judgement-oriented work • Highly reliant on individual expertise and experience • Dependent on star performance

Routine ⟷ Interpretation/ Judgement

Complexity of work

Figure 10.4: Classification Structure for Knowledge-Intensive Processes (Davenport, 2005:27)

Davenport believes that understanding how to improve the productivity of knowledge workers is one of today's most pressing economic issues but he was not the first to argue this point. Drucker (1911-2005) introduced the term "knowledge workers" in his book "The Concept of the Corporation" which was a portrait of General Motors and published in 1946. In the book he argued, and indeed, continued to argue throughout his life that the world was moving from an economy of goods to an economy of knowledge, from a society reliant on the brawn to one ruled by the brains of knowledge workers. He also believed in empowering workers and treating them as resources rather than like cogs in a human machine. He wanted to engage the creativity of individuals but admitted there was a balance to be made, rely too much on empowerment and the result is anarchy, rely too much on command and control and creativity is stifled. He reasoned knowledge and hence education was the most important resource for any advanced society.

Drucker (1954) was also responsible for introducing management by objectives and emphasised the importance of managers setting long term objectives and then translating those objectives into more immediate goals. He wrote extensively about Japanese management techniques long before they became popular in the west but he also exported many American techniques to the ever eager Japanese who wanted to learn from the west. In 2001, he was reflecting on a lifetime of learning and predicting that future global multinationals would be directed by a new elite core of managers capable of balancing the conflicting demands of short and long term deliverables using various strategies including alliances, joint ventures and know how agreements. The author wonders just how much Ghosn has been influenced by the late Peter F. Drucker.

10. 4 Conclusion

This chapter has described what is happening in global Nissan and debated the future of knowledge management at Nissan. It has described how globalisation and off-shoring is impacting the author's knowledge management strategies. It has also brought the study to an end and shown how and why the OAK Methodology has become key to NTCE's strategy for setting up and managing the Indian operation.

This chapter has made the following theoretical and practical contributions to knowledge.

10.4.1 Theoretical Contributions to Knowledge

- For the Japanese, the welfare of the group is paramount and exceeds the needs of individuals. Initially, the collective was a "cultural strength" of NTC with its consensual decision making, long hours of work, attention to detail and the tribal allegiances but over time these same strengths became its weakness. Senior management at NTC recognised these weaknesses but were unable to rectify them and, as with previous times in the country's history, they were prepared to learn from "outsiders" and duly formed an alliance with Renault, which arguably kept Nissan in business.

- Ghosn has purposely been allowed to operate within a *"gaijin bubble"* of his own so that the company learns a more competitive style of management more suited to the twenty-first first century.

- NTC job manuals are not necessarily about learning and standardization. They are a deliberate ploy to control the new starters and mid-career scouts. It tells them who the company recognizes as the subject matter expert and introduces them to the subject with a basic level of knowledge and then expects them to learn through building a relationship with the subject matter experts. If they fail to perform or conform to the group norms then access to the knowledge they need to do their jobs and forward their careers will be denied. These relationships of obligation hold NTC together. It is the same strategy the company employed when writing the original Nissan Engineering Manuals. It is history repeating itself, a cultural pattern of reinforcing obligations.

- NTC engineers are culturally indoctrinated to think deeply, they are expected to understand the detail, whilst a NTCE engineer's learning tends to be reactive and linear, both forms of learning are reflections of different organisational cultures.

- NTCE engineers react to problems, one action leads to a counter action with shallow, loosely linked thoughts. Problems are solved quickly but the depth of thought is sometimes lacking. They are prized for getting the job done. It is a competition to see who can do what and indicative of an individualistic culture.

- Individualistic cultures gain self-respect through competition, which ultimately demonstrates the individual's uniqueness and separateness from others. In collective cultures, employees are able to achieve self-respect through service within the system. They are rewarded for dedication and compliance.

- NTC engineers have been culturally programmed to think more deeply. Their understanding is regularly challenged through the learning process.

10.4.2 Practical Contributions to Knowledge

It would be useful for researchers and practitioners to

- Understand how national and organisational cultures affect learning and an individuals sense of self respect.

- In the years to come it would be interesting to investigate what remains of the Ghosn legacy, or rather how that legacy, which pitches the needs of the individual against the collective, has been assimilated into the organisational culture.

The next chapter concludes the thesis and discusses the contribution to knowledge management and implications for further studies.

Chapter Eleven

Conclusion and Contributions to Knowledge

11.0 Introduction

This Chapter concludes the thesis by reflecting on the author's role as a researcher and a practitioner. It also summarises what has been achieved against the aims and objectives set out in Chapter One, collates the theoretical and practical contributions to knowledge and presents potential avenues for further study.
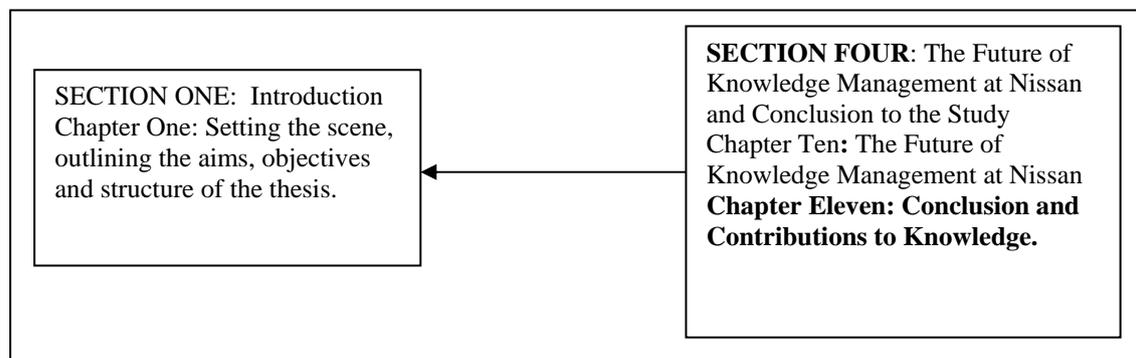
11.1 Reflections of the study and findings as a researcher and as a practitioner

This section discusses the thesis in terms of the journey the author made both as a practitioner and researcher and shows, given the reflective nature of the research, that the strategy and the research methodology emerged in tandem and were dependant on each other. It shows how key learning points emerged and themes developed which shaped the author's thinking and resultant OAK Methodology and comments on how the author came to see himself as a participant observer or a commentator rather than an internal change agent.

The author used a strong narrative approach to tell this story and present it as close as possible to real life. One of the challenges of real world enquiry as highlighted in Chapter Three and addressed by this study, is in saying something sensible about complex and relatively poorly controlled or uncontrollable situations. The study was in depth and context specific and the research methodologies were designed

accordingly. The author's research and data collection methodologies were systematic but the way it which it is presented reflects what actually happened working in the messy interface of organisational lives. His knowledge management strategy emerged from work grounded in practice and informed by literature in a constant and iterative loop of enquiry and reflection. The research included structured and semi structured interviews at group and individual levels and a number of facilitated workshops. The making of the Knowledge Maps were in effect case studies in that they were studies of how people worked; and the data from the interviews, case studies and workshops were analysed and formatted quantitatively and qualitatively and presented to all those directly involved and to the company Directors to make the case for organising around knowledge. The data gathering techniques, which were rooted in ethnographic procedures, worked exceptionally well in the early stages but more focused questions, were necessary as the study developed.

The author accepts that, as with any action research, the way he acquired data and classified and quantified the results is open to discussion but a mix of research techniques and analytical procedures (triangulation) was adopted to help improve the reliability of the research. The workshops and presentations were a useful way of validating the results as they gave the managers and staff members the opportunity to voice their opinions and dissent. The conclusion of this study, which did not become apparent until the last chapter was being written and the author was able to identify an emerging pattern of events by re-reading the thesis, is that knowledge management at Nissan is a process of cultural change, shaped by those in positions of power and dependent on the interaction of structural, organisational, technological and procedural elements which cannot be treated separately; and that efficiency, sustainability and the beginnings of a knowledge based learning culture can be realised by organising around knowledge and that knowledge management and organisational learning depend on developing a global mindset which allows for a variety of cultural contexts.

In Chapter Two the author described how Nissan's approach to knowledge management is rooted in the political and cultural history of Japan and upon reflection, the author realises that that the quest for knowledge has always been driven by a need, which is shaped by the ambitions of those in power at any point in time. Japan and

likewise Nissan have adapted but always tried to control from the centre as they fused and assimilated ideas in their search for knowledge and growth. It explained how in the early 9th Century Japan all but ceased contact with China allowing only a "gaijin bubble" in the southern provinces to selectively trade in areas which suited them and assimilate borrowed elements within its own culture to satisfy the need for independence and to establish a Japanese identity. It continued by explaining how the Tokugawa Shogunate did the same in the 17th Century expelling European traders and missionaries effectively closing off Japan from the rest of the world for two centuries but allowing the Dutch to operate through a "gaijin bubble" in Deshima on the proviso that they did not spread Christianity. The need for knowledge in this instance was political control and military strength but at the same time the Japanese continued to learn from the West. They did something similar in 1862 when they sent a delegation to investigate and learn from Britain. This time the Shogunate wanted the "inside-knowledge" that would make them richer, help them fight Western Imperialism and keep them in positions of power.

Ten years later the Meiji Restoration sent out a second delegation to learn from the west, this time to adopt the necessary practices to make it competitive as a country and at the same time it set about changing societal norms to accept a new breed of entrepreneur like Masujiro Hashimoto, who founded the company which eventually became Nissan. Prior to the Second World War the Japanese Government supported companies like Nissan and stopped foreign companies becoming established in Japan and after the War it instigated Keiretsus, companies with inter-locking business relationships to stop takeovers. The Keiretsus also purchased goods from each other and their links enabled close supplier change management and a quicker response to problems being solved. Nissan also shifted assembly and the majority of its managers when they reached the age of fifty to the keiretsu to strengthen the links but also to reduce costs. In this they were acting out of a Confucian sense of responsibility for the company, the community and Japan but above all, it was about control.

After the War, Nissan established a licensing agreement with Austin Rover and created a different kind of gaiijn bubble and learnt more about the business of making cars. The Japanese automotive industry was also willing to learn and put into practice the lessons of US quality control guru, William E. Deming to improve customer

satisfaction and build on Henry Ford's and Alfred Sloan's ideas to establish the concept of lean production, a process of streamlining mass production by using less of everything. Again, Japan showed that by assimilating ideas and practices from the West it could take learning to a new level. Nissan grew in the sixties and seventies and in the eighties, a change in world trade regulations meant that it could no longer rely on export sales for growth but had to manufacture in each of its main overseas markets. The company adapted to survive and also learnt that it with its key markets threatened it needed to design vehicles specifically for the markets involved and opened technical centres in the USA and Europe. The nineties saw a reverse in the fortunes of the company, a down turn in the world market was exacerbated by a lack-lustre product range and an organisational culture which slowed decision making. The very things which were said to have made Nissan great – its people, its organisational culture, its products - were the things making it dysfunctional.

The company rationalised its product range, made people redundant and closed a plant in Japan but it was not enough to ensure survival and once again, learning its lessons from history it looked outside for help and forged an alliance with Renault and brought in Carlos Ghosn, a gaijin to help it face the unpalatable truth that it needed to change. It was an alliance whereby it could share synergies and learn for its partner rather than a takeover. The company now has global design, technical, manufacturing and supplier strategies; it also has introduced Global Executive Training (GET) for its elite who go through a process of assimilation, taking and adapting western management ways to suit Nissan and ultimately benefit Japan. Again, the thirst for knowledge is driven by ambitious needs of those involved not only for the survival and profitability of the company but to promote themselves and their careers. The GET people are the global reincarnations of the 9th Century Japanese diplomats, the Tokugawa Shogunate, the Samurai and the salary men. They run Nissan by managing the bottom line and key performance indicators. Bottom line thinking is quantifiable and is about making profits for shareholders but the rhetoric of the bottom line stipulates only the views of experts (in this case the Directors) are relevant to organising and assessing the goodness of organisations. Using Key performance indicators a one dimensional approach to making things run smoothly are indicative of straight line thinking. On the one hand they stretch people by focusing thoughts and creating a need which is a precursor for the use and creation of knowledge but on

the other, the danger shown by this study is that when organisations neglect basic human needs and become blindly target driven it can override the very purpose of the organisation

It was not until Chapter Six that the author realized that he had to take into account the power and politics within the organisation if he was to find a sponsor for his projects. He also realised that in doing so that he was in effect becoming a politician himself and purposefully used, fostered and relied on the support of his immediate Director and that of the Managing Director to promote his knowledge management strategy and spent his time as a participant observer, making and influencing strategy through them and as such was forced to rethink his role as a change agent. In Chapter One the author explained that NTCE's Managing Director initiated this study because he wanted to know how we used knowledge management to raise the technical capability of the company to undertake Case III projects. The study was driven by the need of the Managing Director not only to raise the technical capability of the company but also to promote himself and his career. The author made much of the direction and more importantly the support of the Managing Director but in reality, although it was a clear invitation to study, expected outcomes were unclear. What did he expect? From experience the author had seen sections like Knowledge Management set up with very good intentions and then disbanded. The author had a vested interest in the section, not only did he enjoy his work but it was the subject of his doctorate and he wanted to develop his practice. He had the self belief, need and drive to make things happen. The author needed the knowledge to make his strategies and satisfy the MD's request and in doing so protect his position within NTCE. It is only on reflection that the author realised his research strategy and methodologies were shaped by a need to satisfy the Directors.

In Chapter Ten the author wrote that the OAK Methodology was a key element of NTCE's strategy for setting up and managing the Indian operation. It is an act of serendipity that this study concluded at a time when the company needed a methodology for knowledge capture and transfer, but the evidence suggests that NTCE Director's are now willing to adopt the OAK Methodology because they have a need to be seen to be managing and leading the change. They are listening because they can see a practical application of the author's work that suits them rather than

they having been convinced by the logic and rationality of the argument. The author argues the OAK Methodology was well thought out, it was logical, rational, underpinned by theory and above all else practical but it was found that this was not enough on its own, it needed a high level sponsor to implement it. The author initially saw himself as an instigator of change but he soon realised it was a part he would not be allowed to play. In May 2005, the author was invited by the Course Coordinator of Global Executive Training into an e-mail discussion with six GET trainees, who have since been elevated to high positions within global Nissan. There had been some discussion at one of the GET Workshops about the benefit of capturing and utilising best practice across the company and the coordinator who knew of the author's work wanted his input into the debate. She asked the question:

"What if we could identify those best practices that individuals at Nissan are already using, share them so as to elevate performance through the enterprise to make Nissan best in class in all of our mission critical endeavours … wouldn't we blow at the competition"

Quite simply, if the company levelled and worked to best practice it would be a significantly better company.   The author argued that the problem is in getting people to adopt and accept what others consider to be "best practice." From his limited experience of GET trainees he imagined they would be the worst culprits because they always seemed to lay claim to "better" ideas and insisted things were done their way and they often reformatted data and information to promote their cause. The author maintained that the company was not going to learn or share best practice until it had the processes (and discipline) in place to structure meaningful dialogue and learning and saw himself as a change agent instigating the change through the OAK Methodology - but the GET trainees disagreed.

"The GET people have to be the catalyst for change that begins the process. By definition these people were selected for their ability to create and manage change (at least I hope so or we will never change). After all isn't GET about leadership? The people and the GET process provide the perfect opportunity and platform to change how we work." GET Trainee (1)

"We may need different definitions for change management. I do agree we need to develop process and a culture that embraces and implements best practices. I just think as leaders, it is our job to lead and instigate that change and I hope working from the GET foundation we can develop the beginnings of that change." GET Trainee (2)

One of the trainees in complete exasperation wrote:

"What are we if we are not change managers and agents?" GET Trainee (3)

The debate continued but for the author, an input from another trainee put the argument into context causing him to reflect deeper on his role, the overall purpose of the study and on his personal journey of learning and enlightenment.

"There seems to be some reluctance for us to want to accept that we can really learn from ourselves, go out there and look and then do something about it. My frustration is that there is a lot of low hanging fruit out there and many of us don't want to grab it, but would rather spend our time wondering what "outsiders" are doing or justifying our own performance. The key step in my opinion is not leadership and change management but the willingness to learn to put pride aside." GET Trainee (4)

"Put Pride Aside …….." This caused the author to reflect on his motives for claiming to be a change agent. Pride is connected with the need for status (Griffin and Tyrrell, 2004) and is the inner sense of satisfaction of achievement. However, in high stress, target oriented organisations people often gauge their self worth and that of others on their ability to meet targets and failure to meet them can result in low self esteem which is damaging to the individual. The same is true of high self esteem which manifests itself in self satisfied boasting, smugness, abusing power relationships, adopting an air of superiority and being blind to one's own faults. The author wondered was he guilty of high self esteem. He admits that perhaps at times it was ego that drove him but he wanted to prove his competence and have his ability recognized.

The author originally entitled his final presentation to the Managing Director as "The Justification for Organising Around Knowledge" but changed it at the last minute to read "The Reasons for Organising Around Knowledge." He wondered why he felt impelled to justify his work. Using the word "reasons" was still fact adduced and served as an argument to organise around knowledge but somehow it seemed a softer word, a reasoned argument rather than a justification which is perhaps indicative of the individualistic organisational culture in which the author operates and one where, as this research has indicated, employees fear blame and individual criticism. He now understands he needs to internalize that competence and to be self aware and assured rather than to continually trying to prove himself in the eyes of others.

NTCE is a European Company owned by Nissan, which has its headquarters in Japan. Managing NTCE needs a predominantly "European" mindset focused on managing an individualistic workforce. Managing NTC needs a predominantly "Japanese" mindset focused on managing a collective workforce. Knowledge of national and organisational culture is a strategic necessity for any organisation and needs constant debate and reflection. Organisational cultures cannot be dictated but they can be shaped. Operationally, things may appear to be the same across borders but the cultural mechanisms to facilitate operations are inherently different; this difference needs to be understood and appreciated. Organisational efficiency depends on being able to draw on nationalistic and organisational cultural strengths whilst accepting that these strengths need balancing to ensure they do not become self defeating. The author accepts that his argument is a perspective, one of many perspectives about what is important for organisational efficiency and it is unrealistic to assume that everyone will readily accept the need or even consider the logic of this argument because for many (including those in NTCE, and Global Nissan) organisational culture is too complex and intangible to deal with.

11.2 Summary of Work and Achievements

The aims and objectives of this thesis were to use knowledge management as a vehicle for organisational change by first, understanding the cultural interactions between partners on their models of learning and then to develop and trial a set of

tools and frameworks to raise the capability and improve the efficiency of Nissan Technical Centre Europe.

The study has shown that efficiency, sustainability and the beginnings of a knowledge based learning culture can be realised by organising around knowledge and that knowledge management and organisational learning is focused on developing a global mindset which allows for a variety of cultural contexts. Knowledge management within Nissan Technical Centre Europe is about aligning strategies and developing the models, tools and methodologies to improve the competitiveness of the company. Knowledge Management initiatives must be of use to people and must have and be seen to have practical applications. The study has shown that knowledge does not flow freely or uniformly within Nissan and efforts to produce organisational learning and change and the spiral up of knowledge, face persistent hurdles as there are a range of psychological, interpersonal and structural factors which make the organisation resistant to change. These barriers need to be identified and understood and strategies put in place to counter them. Knowledge management and learning at Nissan has been shaped by an organisational culture driven by individuals or groups of individuals which is the legacy, in part of the company having no clear founder. Knowledge management initiatives within Nissan need a high level sponsorship if they are to be successfully embedded. Nissan is built around people and not process and it allows managers decide how things are done.

The study has provided a strategy and methodology to Organise Around Knowledge (OAK) to raise the capability of the company and facilitate bottom up thinking. It has also given the company the beginnings of a model for organisational efficiency which will provide management with a framework for managing across borders and people of different nationalities and cultures.   These methodologies are novel and have contributed to a better understanding within NTCE of the importance and effect of organisational culture on knowledge management and organisational learning. The author concludes that acquiring a functional understanding of organisational culture requires deep study and reflection and considers that he was fortunate to have had the enlightened sponsorship of both the Managing Director and his line manager in allowing him the time and resource to think, to develop his knowledge management strategies.

11.3 Theoretical and Practical Contributions to Knowledge

This research has offered a unique opportunity to apply theoretical insights into a significant and ongoing problem facing a global commercial enterprise. This has necessitated the combination of a reflective approach with the need to adapt to the constraints of organisational reality. It has been about finding a practical solution to a pressing problem and in doing so the author has had to straddle the camps of the academic and the practitioner and has made the following theoretical and practical contributions to knowledge.

11.3.1 Theoretical Contributions to Knowledge

The theoretical contributions have been categorised under the following headings, Nissan's History, Present Day Global Nissan, Present Day Nissan Technical Centre Europe, Working with the Japanese, Organisational Cultures, Nissan's Organisational Culture, and Knowledge Management at Nissan and Organisational Learning at Nissan.

11.3.1.1 Nissan's History

- The author has identified that Nissan employed strategies gleaned from Japanese history to survive. In the past Japan has created what the author has called *"Gaijin Bubbles",* where they restricted access to knowledge, and manipulated culture both inside and outside of the *"bubble"* to control the populace. Likewise, Nissan created its own *"Gaijin Bubbles"* to learn from the West. The company learned about automotive design and development through carefully arranged strategic alliances and joint ventures. Nissan, like Japan has always controlled from the centre and has decided what is allowed in and out of the bubble.

- Global Executive Trainees share characteristics with, and can reasonably be termed the reincarnations of, the 9th Century Japanese diplomats, the Tokugawa Shogunate, the Samurai and the salary men.

- Nissan management philosophy has to be understood in a cultural-historical context. It was once paternalistic, highly traditional and deferential where the welfare of the individual is strongly linked to that of the organisation and the nation but this may be changing because the system of lifetime employment for Nissan employees and the salary men is crumbling.

- Previous change initiatives at Nissan were de-railed by middle management.

- Nissan's failure in the nineties was largely due to the unbending mindsets of the company elite.

11.3.1.2 Present Day Global Nissan

- The GET model is instantly recognisable to the Japanese as an alternative to the University model, one which incorporates the important socialising aspects of Nissan's organisational culture and by extension the socialising elements of Japanese national culture, and preserves the mechanism by which social capital is developed within the company.

- The reason Nissan has been able to quickly assimilate and adapt to a seemingly alien western management style is because behind the rhetoric Nissan's organisational culture has always been elitist and this has had a direct effect on knowledge management and learning within the company.

- Nissan is shaped by individuals rather than by process; its knowledge is embedded in the social networks of Nissan Technical Centre Japan and central to these networks are technical and managerial experts.

- Nissan Global Culture is the amalgamation of cultures from multiple organisations, scattered across the globe which are unified by a common vision and harnessed by objectives.

- Nissan has been built around people and not process and that for any initiative to succeed or even be launched within the company it needs a strong sponsor.

- Global Nissan does not have a strong corporate culture. Nissan was not influenced by a founder's philosophy, policy, or image. At one level this gave Nissan Directors the freedom to direct as they chose. It also meant that top management positions were open to all employees who were motivated enough to be interested. However, the absence of a strong philosophy or visible embodiment of the founder makes it difficult to unite the whole company, provide a clear sense of direction and keep the company moving forwards causing the company problems.

- Ghosn has purposely been allowed to operate within a *"gaijin bubble"* of his own so that the company learns a more competitive style of management more suited to the twenty-first century.

11.3.1.3 Present Day Nissan Technical Centre Europe

- NTCE has relied on individuals to drive it forwards and is not learning from past mistakes.

- There is a blame culture at NTCE and past change programmes have failed to become embedded leaving the workforce cynical about any new initiative resulting in resistance to change. These organisational mindsets have been allowed to develop over the years and are contrary to the efficient running of the department.

- NTCE has a reactive and fire-fighting culture with people regularly pulled off jobs to sort problems. The Company revolves around the Directors and Managers, not as facilitators but as authoritarians who are the focus of power and where all interactions within the group move towards them.

- This authoritarian or autocratic style of management is the result of a control organisation where individuals have been judged and promoted for the way, and speed at which problems are resolved and control reasserted. There is a belief that any error is avoidable through managerial controls hence the reliance on Key Performance Indicators.

11.3.1.4 Working with the Japanese

- The Japanese have elevated people like Carlos Ghosn and Edward Deming into the position of Confucian elders to make it psychologically acceptable for them to be led by *gaijins.*

- The Japanese approach to face saving and *hone-tatamai* can lead to distrust in a multi-cultural setting.

- Japanese group dynamics may be driven by a sense of obligation rather than the camaraderie as suggested by the literature.

- The salary man's commitment to the company is his way of providing for his family and he is not, as the literature suggests, putting the company first.

- Subcultures, like the *gakubatsu* can be very strong and can sometimes undermine the host culture particularly within an alliance where members have divided loyalties.

- Although Japan's national culture influences all Japanese companies it is incorrect to assume they are all the same. Nissan conducts its business differently to that of Toyota and Honda.

- "Bottom up" management actually means hearing the voices of the selected few and even then, these voices are often self-censoring.

- The Japanese management system of consensus is a theatre for the performing elite and dissenting voices are quickly squashed or marginalised. Involvement means to concur with the direction of the company elite.

11.3.1.5 Organisational Cultures

- Organisational cultures can become dysfunctional.

- Organisational cultural norms of making presentations and holding meetings cause conflict, distrust, frustration and sometimes misunderstanding in a global organisation.

- All nationalities have preferred communication styles and rely on body language to manage impressions, convey messages and emphasis meanings but these are not always easily understood cross culturally. Culturally mediated styles of communication limit understanding in global organisations

- Cultural change is dynamic and cannot be controlled, however by studying culture organisations can learn to accept, appreciate and understand the reasons for the differences and identify interventions which may assist in helping culture develop in a particular way, minimising the dysfunctional elements but making the most of the cultural strengths that each company brings to global Nissan.

- The key to sustainability and implementation is in recognising and managing within the cultural constraints of the company

- People need affirmative feelings of Recognition, Respect, Reward, Trust, Support, Safety and Relationships to work efficiently. Although these feelings are the same as needed by human beings to thrive in any circumstances it is important to note that this research indicates that the words labelling these emotions are culturally mediated and had different connotations depending not

only on the nationality of the people involved but also the organisations to
which they belonged.

- Individualistic cultures gain self-respect through competition, which
  ultimately demonstrates the individual's uniqueness and separateness from
  others. In collective cultures, employees are able to achieve self-respect
  through service within the system. They are rewarded for dedication and
  compliance.

- Organisational cultures cannot be dictated but they can be shaped.

- Organisational efficiency depends on being able to draw on nationalistic and
  organisational cultural strengths whilst accepting that these strengths need
  balancing to ensure they do not become self defeating.

- Operationally, things may appear to be the same across borders but the
  cultural mechanisms to facilitate operations are inherently different; this
  difference needs to be understood and appreciated.

- National cultures have a tremendous impact on organisational cultures.

- The effect of an all encompassing global organisational culture, where
  management philosophies and systems remain rooted in the cultural model of
  the parent company, is damaging as it blinds management to the need of
  recognising the effect that national cultures have on organisations.

- Knowledge of national and organisational culture is a strategic necessity for
  any organisation and needs constant debate and reflection.

- Efficiency, sustainability and the beginnings of a knowledge based learning
  culture can be realised by organising around knowledge

11.3.1.6 Nissan's Organisational Culture

- NTC and NTCE Directors set the direction, rather than dictate the direction for the company. They expect others to follow but it is not mandatory and providing managers deliver, they can decide how things are done.

- The way Nissan employees relate to each other is a key to the success of the company. Knowledge is articulated in relationships, so any relationship is about shared knowledge. Relationships enable the making of meaningful connections and sustainability is pursued through the creation of the necessary cultural frameworks to manage those relationships - clarifying, codifying and mediating expected cultural mindsets.

- In NTC best practices, lessons learnt and processes are "offered" to managers. They are not enforced and standardisation is not obligatory. Managers are charged with delivery but how they deliver is their responsibility. The onus is on the individual to deliver at all costs which leads to competition and a silo mentality, all of which are "delivered" within the framework of a collectivist culture.

- In NTCE, Western Managers interpret the sense of respect and responsibility within an individualistic cultural framework that also leads to competition and silo mentalities that manifest themselves in a different way but in both instances it is about "self."

- For NTC Japanese managers, "self" is negotiated through their obligation-orientated relationships with others, for NTCE Western managers, it is also negotiated but out of the necessity of circumstance rather than the obligation of relationships. It follows that negotiating self through relationships is supportive and leads to a long term view whereas negotiating self out of the necessity of circumstance is relatively short term.

- For the Japanese, the welfare of the group is paramount and exceeds the needs of individuals. Initially, the collective was a "cultural strength" of NTC with its consensual decision making, long hours of work, attention to detail and the tribal allegiances but over time these same strengths became its weakness. Senior management at NTC recognised these weaknesses but were unable to rectify them and, as with previous times in the country's history, they were prepared to learn from "outsiders" and duly formed an alliance with Renault, which arguably kept Nissan in business.

11.3.1.7   Knowledge Management at Nissan

- Knowledge management at Nissan is about aligning strategies and developing the models, tools and methodologies to improve the competitiveness of the company.

- Knowledge management initiatives need high level sponsorship within Nissan if they are to be successfully adopted by the company because people in positions of authority have the power to dictate what is learnt and what is worth knowing.

- Knowledge management initiatives must be of use to people and be seen to have practical applications.

- There is no formal knowledge capture or transfer processes in global Nissan.

- A suggested first step in managing knowledge and making the necessary strategies is to understand and manage the information on which to build knowledge.

- Carlos Ghosn is only interested in the bottom line and this is key to understanding the dynamics of how knowledge is currently managed at Nissan.

- Knowledge Management initiatives at Nissan have to be practical.

- Knowledge Management is like any other function within Nissan, it is about deliverables and Knowledge Maps are the frameworks for developing the necessary cultural mindsets to deliver company objectives.

11.3.1.8 Organisational Learning at Nissan

- The key to organisational learning and knowledge capture within Nissan are the Master Schedules. These schedules are the gateways or frameworks to help the company mine for information.

- Learning is sometimes compromised by perceptions of individual and organisational identities and challenging these identities can be threatening because often, our self perception is different to how others see us.

- Japanese Managers in NTC do not see the need for processes because it is all captured "in the minds of the engineers."

- In the West "offered" is often a euphemism for "told" but that is not always the case in NTC. The word of NTC General Managers is sacrosanct. These are all-powerful people who are charged with delivery and how they manage their resource is their prerogative which leads to inefficiencies due to lack of standardisation.

- Nissan Technical Centre Japan relies heavily on OJT (on the job training) to ensure quality of design and Japanese seniors and managers take the responsibility of training their staff upon themselves.

- In NTC, there is no standard process for Design Reviews; engineers learn what is acceptable from their seniors and managers through on the job training. The social processes of holding a design review, manifest themselves externally first and then act as a conduit for knowledge sharing and creation and are internalised through a transformational process. During socialisation, individuals share experiences and develop common mental models.

- Generally, NTCE (British) engineers tend to want to be sent on training courses and to collect the associated certificate of attendance and learning. British managers and seniors also expect the company to provide the necessary level of tuition.

- The Japanese approach to learning and more especially, the associated self-discipline does not necessarily apply outside of NTC.

- On the job training is a culture whereby engineers are expected to submit to authority.

- Procedures and processes in Nissan are seen as "loose scripts" and it is only through talking and working together that people learn the tacit as well as the explicit knowledge. Being excluded from these networks curtails learning.

- Loose scripts are a predetermined cultural control which emphasises the different ways power is reflected in procedures in Japan and the UK. Japanese procedures perpetuate a network of relationships where the power remains with the chief stakeholders whereas the British procedures have an authoritative function where the power is embodied within the issuing authority.

- NTC job manuals are not necessarily about learning and standardization. They are a deliberate ploy to control the new starters and mid-career scouts. It tells them who the company recognizes as the subject matter expert and introduces them to the subject with a basic level of knowledge and then expects them to learn through building a relationship with the subject matter experts. If they fail to perform or conform to the group norms then access to the knowledge they need to do their jobs and forward their careers will be denied. These relationships of obligation hold NTC together. It is the same strategy the company employed when writing the original Nissan Engineering

Manuals. It is history repeating itself, a cultural pattern of reinforcing obligations.

- NTC engineers are culturally indoctrinated to think deeply, they are expected to understand the detail, whilst an NTCE engineer's learning tends to be reactive and linear, both forms of learning are reflections of different organisational cultures.

- Nissan work practices have been compared with those of Toyota and it has been shown that whereas Toyota tightly control and manage their process Nissan has relied on individuals or groups of individuals to deliver. Toyota's knowledge seems to be in the process, Nissan's knowledge is in its people.

- Nissan Japan's more open approach to recruitment is altering the Japanese approach to self promotion and self enhancement.

- NTCE British engineers want a procedure in order to understand and debate what is expected of them and they expect to be given all the information to do the job and understanding why is an important part of the process of learning. The view of Japanese management is somewhat different, as they expect British employees to act within predetermined guidelines and do not understand why they should need to know about something that has been decided by the management on their behalf. The engineers should trust that the company (working through the senior management) have taken everything into account before asking the engineers to do something.

- NTCE engineers react to problems, one action leads to a counter action with shallow, loosely linked thoughts. Problems are solved quickly but the depth of thought is sometimes lacking. They are prized for getting the job done. It is a competition to see who can do what and indicative of an individualistic culture.

- NTC engineers have been culturally programmed to think more deeply. Their understanding is regularly challenged through the learning process.

11.3.2 Practical Contributions to Knowledge: Insights relating to the implementation of the strategy

The practical contribution to knowledge is in providing practical insights for the research academic and a sound method and reflective insights for knowledge management practitioners and includes the following

- It would be a useful frame of reference for researchers and practitioners to identify if other organisations develop their strategies and adopt practices taken from history. This knowledge would help them analysis change and plan interventions.

- Compare and contrast the meaning and boundaries of employee obligations in a multi cultural context and its effect on organisational development.

- To understand how the way in which society is organised impacts the organisation and organisational behaviour especially in a global context

- Consider the effect of how organisational cultural norms of making presentations and holding meetings manifest themselves in a global organisation.

- Understand the cultural expectations of organisational procedures and how they impact learning.

- Understand the effects of body language in a global setting.

- Understand what the word "practical" actually means in the context of their work and who makes the judgement as to practicality to ensure research time is not wasted

- Understand that learning is sometimes compromised by perceptions of individual and organisational identities and challenging these identities can undermine charge initiatives.

- Understand the cultural expectations of training in any given organisational setting when making and implementing training and learning strategies

- Understand the culturally mediated affirmative meanings of Recognition, Respect, Reward, Trust, Support, Safety and Relationships in the organisations in which they work

- Understand how the absence of a strong philosophy or the visible embodiment of a founder has on corporate culture and vice versa.

- Understand how "self" is negotiated in a cultural context and how that impacts organisational behaviour

- Recognise that organisational cultures can become dysfunctional

- Understand how national and organisational cultures affect learning and an individual's sense of self respect.

- In the years to come it would be interesting to investigate what remains of the Ghosn legacy, or rather how that legacy, which pitches the needs of the individual against the collective, has been assimilated into the organisational culture

- Recognise that knowledge management has to encompass and improve business processes. These processes can be codified and articulated as business practices or they can be the less understood processes of how human beings relate to each other in organisations. These processes are conduits of business practice and traditions. Continually reflecting on process is the way we generate meaning together. The organisation must continually reconstruct

their nature in order to keep them alive and remain sensible in the face of rapid global change.

11.4 Implications for Further Research

The study has shown why it is necessary to introduce standards and frameworks to facilitate knowledge management, organisational learning and change in order to raise the capability of the company. The areas for future research arising from this thesis lie both within the company and the academic community. In terms of the former this work is primarily concerned with how the company (NTCE) continually adapts the OAK Methodology to work within and across cultural contexts and its ability to develop the Model for Organisational Efficiency. Knowledge management and organisational learning are multi-dimensional processes that cross organisational boundaries and impact people. The study needs to be broadened to determine the relationships between learning and the exploitation or utilization of knowledge to understand better how knowledge management and learning not only increases capability but how it can be measured to demonstrate improved organisational performance. Early indications, of work with an Indian company, are that these measures should be understood in a cultural context. In comparison to Europeans the Indians require more detailed knowledge maps which will be followed to the letter. More work also needs to be undertaken to understand the learning process and the cultural and cross cultural constructs that influence knowledge and its uses in different contexts.

It would be useful to use this work as a reference point to pilot and demonstrate the measurable benefits of creating and maintaining an in-house team of action researchers within Nissan. This team would regularly interact with academia and supply them with case material. The academics in turn could provide them with theory, methods and comparative case studies (Figure **). This iterative knowledge cycle of learning would benefit both parties but most importantly it would show how industry and academia could practically work together. The author imagines that the team would comprise of anthropologists, sociologists, psychologists, engineers, information technology specialists, auditors and change managers but the study would

begin to determine the actual skill mix and necessary level of skill of such a team and how it interfaces with both the organisation and academia.
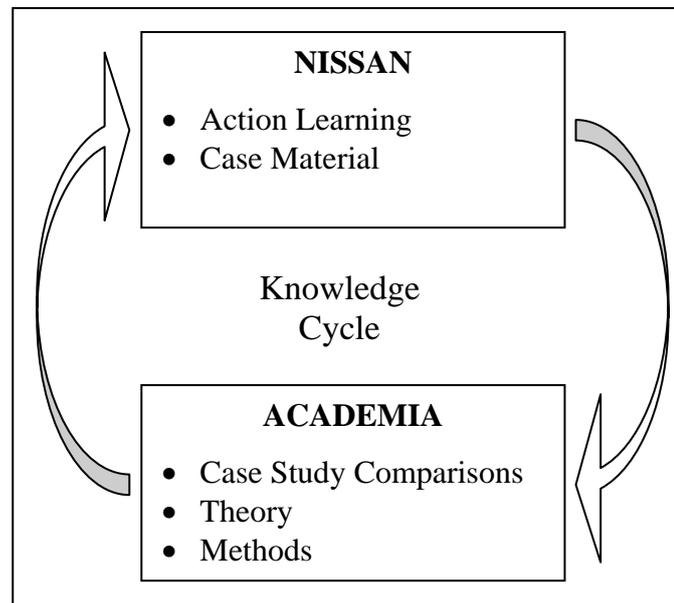
Figure 11.1: Knowledge Cycle between Nissan and Academia

This leads into the next area of further study which is to determine what makes a subject matter expert and suggest ways to ensure that the level of expertise is demonstrably maintained in a global organisational setting. This will become increasingly important in the age of the transient knowledge worker in ensuring the organisation retains the skills it needs to remain competitive. It would also be useful to study the impact of introducing Japanese work practices like Kaizen into western organisations, show how the understanding of these practices have been interpreted and determine if over a period of time they have been counterproductive in undermining national and organisational strengths. This work could also be used as a reference point in understanding and comparing how Toyota and Honda manage their design processes and more generally, for looking at the impact that organisational cultures have on design reviews in the automotive industry.

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<u>Appendices</u>

Appendix 1: Nissan R&D Locations
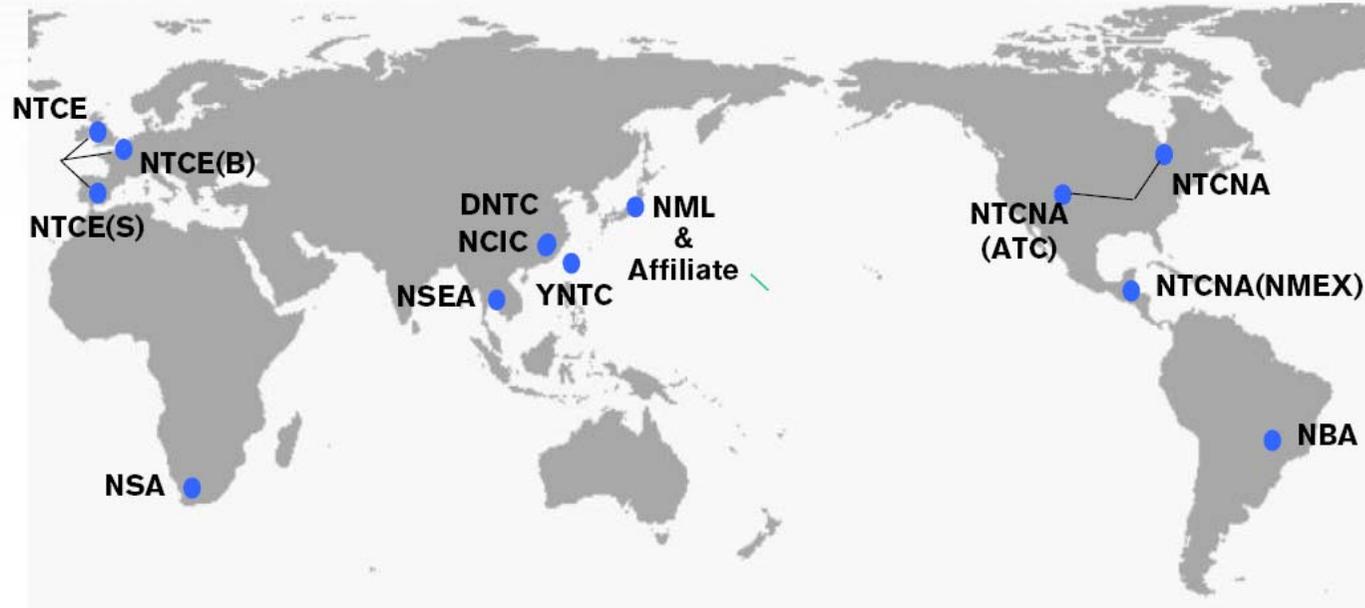
Appendix 2: Design Review Questionnaire

QUESTIONNAIRE

Design Review Mindset

	Strongly disagree	Disagree	Don't Know	Agree	Strongly agree
Q1. Design Reviews are more effective in NTC than in NTCE.	○	○	○	○	○
Q2. In NTC there is no formal training in how to do a DR.	○	○	○	○	○
Q3. Japanese Seniors and Engineers working in NTC have a high sense of personal responsibility.	○	○	○	○	○
Q4. Japanese Seniors and Engineers working in NTCE have a high sense of personal responsibility.	○	○	○	○	○
Q5. Local Seniors working in NTCE have a high sense of personal responsibility.	○	○	○	○	○
Q6. Local Engineers working in NTCE have a high sense of personal responsibility.	○	○	○	○	○
Q7. Senior Engineers working within NTCE do not seem to feel worried or nervous before attending a Design Review.	○	○	○	○	○
Q8. Engineers working within NTCE do not seem to feel worried or nervous before attending a Design Review.	○	○	○	○	○
Q9. Design Reviews are only effective when they are reviewed by an experienced expert.	○	○	○	○	○

Submit

Appendix 3: Kaizen Interviews

Kaizen KG241104

Interviewer:

I've got a set of questions that are quite easy to work through. Has your attitude towards this activity changed since you began?

Interviewee:

Of course - it had to do.

Interviewer:

Right. Good. Excellent. And how has your attitude changed? How did you feel at the start – at the start of the kaizen activity?

Interviewee:

Mixed really because been here, seen it before, seen things, peered into the wilderness and disappeared.   Positive because it seemed to come from Dave who has a level who could get things done so was brought in at a higher level. So mixed feelings, but positive because everybody was going to be working towards the same goal, albeit at the time that the goal was they would improve - how we'll get there was a bit hazy - but it wasn't actually told how hazy it would be.

Comment: Respect

Interviewer:

Right. How do you feel now about it?

Interviewee:

Now I think the pilots and the groups have overtaken the management.   The management can't keep up with us. So what was their initiative? If the people who'd been tasked with it, have fed it down, run with it, and do quite a lot of good work, managed to get people to put input into it, but now the management has failed us because the things that were said would be done don't seem to be happening.

Comment: Support

Interviewer:

Management being who?

Interviewee:

Well the haziness of how it's happening – the haziness kind of moves on from one level to another and now we've got 11 stakeholders, but that's all hazy how we are going to do that. So we keep running and taking it as far as we can and then it just seems to come to a stop. For us we've got the group in Spain and the group here. And of course Paul wanted it to be a shared activity but that couldn't be until it had been rolled out in

Spain, which wasn't in the control of the kaizen pilot or the kaizen pilot group, so I feel that we could have been supported better.

Comment: Support

Interviewer:

So it's a kind of split site problem. Where would this support come from now you need it?

Interviewee:

I suppose it should come from Knowledge Management because initially it was said that they would roll out to make Spain the same as us and that didn't happen. So now you have got different levels, split site, you've got different levels instead of it being carried along at the same speed. From that being the situation – you have got a two-tier system - haven't you? It was said at the beginning, at the kick-off, that we must consider Spain – that they're as important as us. If I was in Spain and knew all this activity was going on and hadn't been rolled out to me, I would feel a second-class citizen.

Comment: Relationships

Interviewer:

And what kind of hands-on effect has that had with the activities?

Interviewee:

None, because they've just been here on this site. But once it's rolled out to them, then it's going to change and maybe it would have been more acceptable to get them earlier on.

Interviewer:

So what you've done independently on this site is going to change when Spain gets involved, possibly?

Interviewee:

Probably, but to what extent or however I don't know.

Interviewer:

How do you feel about that?

Interviewee:

Let down. Disappointed. That's what I mean, it was all feisty and fighting at the beginning – it's just kind of petered out.

Comment: Trust

Interviewer:

Is there anything specifically that is missing from what's been done that would have solved that problem and the feeling of being disappointed and let down. What is missing from the activity that gives you [indecipherable]?

Interviewee:

More security.   **Comment:** Safety

Interviewer:

Can you give me a concrete example?

Interviewee:

I know it's a pilot that goes a bit like how the wheel turns as it goes along the road.

Interviewer:

So, why? Would you say you have a kind of minimal expectation of what structure you should have for a pilot now and it hasn't come up to the minimum expectation?

Interviewee:

I think that something that had been given such a high profile, the direction and the support would have been higher.   **Comment:** Recognition

Interviewer:

Question here – has this activity changed your attitude towards continuous improvement?

Interviewee:

No, because we are quite proactive on our section anyway to do continuous improvement. I think the benefit was everyone getting together to do it.

                                                                                                  Comment: Relationships
Interviewer:

Do you think that's an important moment of it - getting everyone together?

Interviewee:

I think it's good for teambuilding when you've got new members in a team or those who haven't been there so long and two are not so experienced, not necessarily in the role that they do, but in the Nissan me kind of speak, how it's done at Nissan.

                                                                                                  Comment: Relationships
Interviewer:

How did the methodology develop throughout the activity?

Interviewee:

Basically as you went along. You are basically left to it, saying this is a knowledge map, make a knowledge map and know what criteria was to meet if the knowledge map was for somebody like a brand new baby kind of thing. Someone who had a little knowledge, somebody who had in-depth knowledge, so you had decide yourself which level to pitch it at. It just developed as we went along basically - what worked for us and what didn't. But nobody said that's wrong.

Comment: Support

Interviewer:

Right. Nobody on your side - nobody on our side.

Interviewee:

Nobody in knowledge management. That said, that's not what we wanted, so if that's not what they wanted – tough – because that's where we've put all our effort into. Nobody has done the PDQC thing, Plan Do Check Action - nobody has checked what we've done is correct. The things we've got, the monitor and everything to see if it works, you know what our commitment was – the five knowledge maps - but nobody said make the quality of them or what's contained in them is okay.

Comment: Support

Interviewer:

Why do you think that is?

Interviewee:

I could be really sceptical here and saying nobody else would understand them.

Comment: Respect

Interviewer:

That's not being sceptical. That's actually possibly highlighting the very point of it. Because how do we know - because it's your work.

Interviewee:

Yes, but nobody gave us the pitch that it had to be pitched at. If it was a brand new starter that it had to be pitched at, anybody should be able to pick it up and use it. But we pitched it at somebody who has knowledge of the homologation but not necessarily the Nissan homologation of it. So that's how we pitched it at.

Interviewer:

How did you make that decision?

Interviewee:

We wouldn't employ anyone who had bottled the knowledge about what we did because it's specialised.

Comment: Respect

Interviewer:

So you've customised that for your section?

Interviewee:

Well that would be the criteria. Well Tony probably wouldn't employ anyone who wasn't below a level than that - like an engineer level who hasn't imagination.

Comment: Respect

Interviewer:

That is probably why you've been allowed to develop it as you have. Partly because it's a pilot and these are new tools and so they are being developed as they are being used. That's something I worked with Andy Stubbs for a while - on the installation ship map and then we moved into the knowledge map. Watching him work with it and actually buy-in to the whole idea because he was dumped in a new section and he was learning the job. He thought it was really useful and I could see so I sat down with him. He was having trouble with the interrelationship map and sat down with him and I was asking lots of questions – maybe I should redraw this? Then it moved into the knowledge map and I think it really helped him to get a handle on the scope of the work and what have you.

So I think what you said under the veil of being sceptical – it's not something that is intended for somebody from (indecipherable). It's a tool for you, for your section to carry out the continuous improvement, to know the sections work and to refine the processes.

Interviewee:

But you see that's the first time that's been said to me. So that's what I was saying about all this haziness – it's not clear.

Comment: Safety

Interviewer:

This is also something that …

Interviewee:

In fairness it's a pilot, yes, and you've got to run with it. The [punches] it kind of thing but you've got to have some boundaries, especially when we were told we were the pilot for Design and know Design - obviously they are engineers and you have got to have A, B, C and if it's so hazy, there's no way will be into anything which hasn't got a set A, B, C.

Comment: Trust

Interviewer:

That's actually coming into the other question and we can deal with these questions together.

Interviewee:

I didn't say that, I didn't say that, I can't read upside down.

Interviewer:

It's happened before with other people. That question is how can the change in attitude that you've had – the fact that the way it's rolled out to other people in the company, so Simon [Enston's] group has asked for it. They are a support group – quite similar to indirect, quite similar to PDS, but there is really a big question mark over Design, and what you were just saying is that you know this is a different situation to Design Engineers. The haziness that you described will not go down very well at all there and this is one of the benefits of doing a pilot and getting this feedback.

I mean what we're doing now is just as important to the kaizen as doing Tuesday morning activities, doing knowledge maps or anything else, because it's the feedback which is going to refine the process. If it's perceived as a kind of haziness or lack of clarity, lack of direction, part of the reason is because it's a pilot and it's been a shaky pilot I would say at times. I'm tending to come across stuff and recognise things as it progresses and what I was just describing to you I've begun to describe to other people about the position of the knowledge map within the section's work and it is a map of your work because it's your section, it's your area. I don't see the ownership as being within VY1.

Interviewee:

But if you have got all these stakeholders who have to buy-in to it and they get more different types of knowledge maps - that's not going to look very good is it?

Comment: Relationships

Interviewer:

How do you mean - different formats?

Interviewee:

Yes.

Interviewer:

Or pitched at different levels?

Interviewee:

Yes. Because they could have a stakeholder and another section could have the same stakeholder, but obviously different things. Ao they would have two knowledge maps and they would think that's different from that – I thought we were all doing a common activity.

Comment: Relationships

Interviewer:

Again, there is a question mark over the limits of the commonality of the tools and how people were taking tools and using them. When you look if there is a standard form for the knowledge map and there is a standard way of laying it out and you include all of the stakeholders - and there's processes and tools and everything else – what's used? Now the level of detail that goes in there I would expect to be the level of detail necessary for the section itself to identify what happens in the process and not for somebody whose not in the section necessarily to understand it.

Interviewee:

They could make that process itself general if the stakeholders agreed to it. Or you could make it so specific that the stakeholders would never ever agree to it. So you could get a stakeholder buying-in for the sake of just signing but not actual buying-in.

Comment: Relationships

Interviewee:

Would that be through lack of understanding of the process, the lack of detail?

Interviewee:

Lack of detail, also basically if there's a problem you shouldn't need a knowledge map to address it.

Interviewer:

No. Can't you think of any way in which the knowledge map would be useful in identifying the problems?

Interviewee:

Only if the management pushed through.

Comment: Support

Interviewer:

How do you mean?

Interviewee:

Well this is a way to float the problems to the top because we've been fighting for a long time we don't think ………..

Interviewer:

The use of knowledge maps.

Interviewee:

Yes.

Interviewer:

So when you go and level with your manager.

Interviewee:

The manager – yes. He has to take it on . At the moment that's never happened. At the beginning we were told all the non-core activity would be addressed by the managers, by the end of August or by the end of September, and we are now into November. So you say that you've been slogging away, you've being doing stuff and a lot more time than it was originally anticipated and it's like you know that's it - Oh well it's going to be in the manager's objectives next year. So why couldn't we say right okay we're busy.

Comment: Support

Interviewer:

It that what you were told?

Interviewee:

That's what I've heard. Yes.

Interviewer:

And where did you hear that from?

Interviewee:

Oh I have my sources. Ears to the ground. Did you know that and also was it news to you?

Interviewer:

I'm not surprised but I obviously have my ears otherwise …

Interviewee:

But this is allegedly, this is allegedly what's going to happen, so if they've been giving it to print in the next year's objectives, that means they've got another 12 months to sort it out. Which doesn't help us and it doesn't impress the main reason for the kaizen activity being kicked off.

Interviewer:

No. But it's come about because of a realisation that in order to get a stakeholder levelling by the managers – it's going to take a long time because there's no one out there. Whereas at the beginning - because it's PDS only - your looking at a fairly easily manageable junk which you map out and you look at the concerns. I think that levelling of stakeholders and the breadth of the area that stakeholders occupy was not really realised, and the fact that you are going out and you are going out all over the place, to level with people you know Japan and Spain and everywhere else.

Interviewee:

Call me long in the tooth, but I mean you've seen this happen before and it's the same kind of recipe, and then it always goes so far and then halts. Because I feel like responsible for ownership for the kaizen that's happened in our group, I feel as if I have let the team members down because I'm their window in kaizen. So kaizen can't support the pilots in doing what it says and me telling the members you know all these critiques that we've got, the problems that I've got, you know, the manager will look at them and level them and he'll take them through and then sort them out. That is going to be totally demoralising. How are you going to keep them motivated, to do the next set of knowledge maps, if they can see that nothing has happened with the other ones?

Comment: Respect

Comment: Recogntion

Comment: Trust

It's like you saying to your daughter – you've got do your homework every night – you've got to do your homework every night – you've got to do your homework every night, but you can't see a report at the end of it or something. You say that 'Oh well done - you've done your homework - and this has gone towards such and such. I can understand why there's mumblings from below – people in the activity – but we've done what we were told but they've not keeping their side of the bargain.

Comment: Trust

Interviewer:

Again, going back to the fact that it is a pilot and as it's progressed I think there's been a realisation, particularly timescales were unrealistic so, for example, you mentioned August and September.

Interviewee:

So why are the timescales unrealistic for the managers but not unrealistic for the kaizen pilot groups?

Comment: Respect

Interviewer:

Ouch! Because the kaizen activities are continuous improvement.

Interviewee:

By all people in PDS regardless of grade?

Comment: Respect

Interviewer:

Yes.

Interviewee:

That's not happened. You can't argue the point.

Comment: Respect

Interviewer:

I can't argue the point. I can't argue the point and from my position it's difficult. I think from VY1's position in general it's difficult and some people might [face] up and say you know [indecipherable] on everyone's face. In fact, me sitting here as a VY1 person, and interfering everyone and getting feedback, personally I'm getting a fair amount of stick - bit by bit. I don't mind that because it's very productive and it's going to make it better.

Interviewee:

Well, you're the representative of VY1, you're not necessarily here as Matt.

Interviewer:

Yes, but even as Matt because I've been involved in the activities in certain respects.

Interviewee:

So can I ask you the questions to find out what you are asking for them?

Interviewer:

Perhaps you should do. Perhaps you should do because there should be a voice from VY1. We can arrange a reversal of the roles because it would be interesting. I'm actually injecting a little bit of this within the interviews – it will show up in the transcript because I feel that I owe some explanation when certain points come up because it's almost from a position as an observer – because a lot of the things I have been doing in kaizen have actually been support in that I'll chip in comments at certain points but I've been watching the groups working, mostly, and making a lot of notes on how the activities have been progressing.

My own perception of my role has been a kind of observer. A participant observer because of course I also got involved and I gave direction where I felt direction was necessary or if people asked me to get involved. But there are questions which are beginning to come up now about the organisation, the best way of rolling out the activities. One of the questions is how do we role this out to the rest of the company? All this feedback is going towards the next pilot which will be with Simon [Enston's] group and eventually to Design.

Now if you look at rolling out to Design, as you mentioned, there are certain aspects which just would not go down well in Design. It couldn't be rolled out into Design other than as a very robust initiative because you've got questions about the upper level support and the sliding timescales, the revision of the objectives, and when they are due to kick in.

There are some parts of the process which have actually firmed up and have worked in a very cohesive way. I like the way the interrelationship maps lead onto selecting core and non-core activity. Then you've got to have a common mission statement from the senior on behalf of the section which identifies what they should be doing, which then gives you what is core and what is not core. You've got the workload data analysis sheet, go onto the knowledge maps and if they're used in the right way, they do serve as a kind of dumping ground of information about the processes and people's ideas and concerns are raised.

One of the things you noticed that I've tried to make sure is that nothing is lost. Now people have made comment that maybe it shouldn't go in. Yes, it should go in. You know you try and fill it with as much as you can. Now that side of things in certain groups has worked really well. VY5 where Zoe dragged in the two new guys and that was a very dense learning experience for them. I think that's worked really well. Then you get sort of later levels - they are talking about levelling. This has come up with other people as well. How does the activity progress it was viewed as you get to this stage and then you move on to the next stage? To this stage and then you go through the levelling and once it started to involve, if you like the higher levels, it's started to break down.

Interviewee:

It's like baking a cake is't it? You bake the cake and when it comes time to put it in the oven and you don't know what temperature it needs to be put in and how long for, well it's pointless baking the cake and I think that's where we are at the moment.

> **Comment:** Trust

Interviewer:

Right. That's a good point because at least one other person has mentioned it and then it's a problem because its certain groups which have been progressing faster than others are at that stage and one of the problems is that there is a difference in progress rate and so your group and Zoe's group at the head of the pack and everyone's been doing exactly want they needed to be doing. Work through the methods exactly as they should have done but because other groups are slower and they are still embroiled in the need to actually dragging out details of the process and it's been quite difficult. I think that all the attention been on baby sitting those groups, getting them up to this level and the idea that, whoops, you know we need to start levelling now hasn't been looked into as much detail as actually dragging the other groups along.

Interviewee:

But it was known at the beginning that levelling was involved.

Interviewer:

I don't know what the detailed process was intended for. I think part of the reason was that we weren't involved in the levelling. I think because the levelling is done between groups of management, you've got the situation where you should be able to take what you've got from the front end of the kaizen procedure and you sent it to the manager and it is levelled with the stakeholders.

Interviewee:

Because I don't think kaizen is an excuse because we were told that we had to have four hours a week for kaizen but we committed that and we stood by it. Now managers use the excuse that they don't have the time I think. It stinks because they told us that we had to have ….

Interviewer:

Is that the ……

Interviewee:

No. No. I haven't been told that's the reason.

Interviewer:

But no is it that the impression that you got.

Interviewee:

But that's the feeling yeah that's the impression that comes across that they are too busy doing other things. Fair enough I am not saying that they are not busy but they still expected that the staff to commit. It's easy for them to say yes you have to do that for four hours a week because I am telling you I am your manager and you have got to support it . But when it comes to them putting some time in, I mean how many weeks as it been going on for that we've putting four hours? I mean the pilots are doing more than that a week by the time you work overtime, and look into things what have you. So that's easily double for me and for the managers not to spend some time proportioned to what their staff have, it comes over as a very unsupportive example.

Interviewer:

What's the solution to that? I mean how can the managers get over that.

Interviewee:

But you see that it I'm not party to what goes on at the higher level and how the level is going to be doing, and what's expected from them to do that. All I know is that we've put a lot of hard work in and people will lose interest.

Interviewer:

Right so it's the motivational thing.

Interviewer:

Yes it's a motivational thing because we've have been tasked to that - we've done that. Those who tasked us to do it should come some way to doing what they were tasked with when it was kicked off.

Comment: Recogntion

Interviewer:

Yes. I understand your position, you are not the first person to mention [indecipherable].

Interviewee:

Yeah because I mean I'll be glad then and motivate them and told them. In some ways it's been hard going sitting here - I don't want to be here - I 've got this to do and that to do and the other - like tough – we've have been told this is what we're doing so we might as well just get on with it. You know, it's like a dog's backside, it's not going to make any difference, you've still got to sit here. They know - okay you think - but they go in and they do put back [comments] in every - well you've seen them all work really really hard and for that not to be supported by bid time from them because they said it had to be done.

Comment: Suppport

Interviewer:

Do you think this attitude is shared? If it is, who else has a similar attitude?

Interviewee:

Well it's not for me to say what people's personal thoughts and feelings are, but I would imagine anyone whose took ownership of the kaizen within their group the same way as me - when they come to the stage that we're at - they should feel the same. So I think it's all just waiting there to come along when everybody gets at the same stage - well you think well what happens next kind of thing? So I think it's just something that's waiting to happen to everyone. Unless the pilots are the same people who say right they have to deliver but that's what happens and I 'm not bothered by the people who are driving the rule every week.   But I would like to think that nobody is like that.

Comment: Recogntion

Interviewer:

Me too actually, because it has been quite an intense activity in that a lot of hours have been put into it. I understand and share your frustration in that there have been situations where there seems to have been a lack of direction at certain times. It's more or less trundled on. Well I think the levelling element has produced a problem because of a realisation of how big it is.

Interviewee:

Because basically we are stonewalled now - once you get to that point you're stonewalled.

Interviewer:

Because you've done the knowledge maps, you've shown concerns out there. You need to take it on.

Interviewee:

I'm not dragging everybody into a role that falls on a Tuesday when we've done what we set out to do just for the sake of Oh this is kaizen Tuesday, because that's silly. That's another thing that still cheeses people off - we go along, and fair enough, for all the people who've got different responsibility afternoons, Tuesday afternoons, but there's still people sitting there and it would be interesting to know how many people in PDS have not been involved in a kaizen meeting. I would say more people than would be healthy, because if it was a PDS activity they should have all been involved.

Interviewer:

At some point I heard temps and contractors weren't expected to do it. Now I can't remember where I heard that but there was at some point there was a question about surely everyone in the section should be doing it. I believe at the outset the intention was from the very top, that's Dave Waddle, because he wants to know what goes on in PDS, and therefore the logical thing to do is to get everyone involved in it because then you do get the input of everyone. You truly find out everywhere, everything that is going on, and if they used in the same way that your group is used in – this comes from the interrelationship map, a complete interrelationship map, the knowledge maps, because you do have everyone's input. Even the sections that had a set of people who were identified - I think this was part of the senior's job to identify who should be involved in it. I think in the end it was decided at the senior level who would be involved in it. I do believe at the very initial stages, there was an attitude that really everyone should be involved in it because if you want to find out what's going on in the department, you really have to involve everyone - it doesn't matter if they are a temp - they are actually working as hard as everyone else, or a contractor.

Interviewee:

They could have been here years and have the most experience. I understand that the decision should you know, not cart blanche if you are a temp, if you know what I mean. If you're a contractor, again I think it's probably a case by case - that's fair enough - but when permanent staff that have not been involved, to take that out of the equation.

Interviewer:

And to throw it back on you - how does that affect your attitude towards the activity?

Interviewee:

Well, it's a case of like - we've got these rules - this is what's happening - but Ah!

Interviewer:

But Ah! Some people aren't subjected to the rules.

Interviewee:

Yes and you can come in with the black skirt on when it's got to be a green skirt but that's alright you can get away with it. Even though I told you that you had to wear that colour.

> **Comment:** Support

Interviewer:

And how do you think that particular attitude affects the activity?

Interviewee:

Greatly I think, because there are no consequences for them who don't participate. The consequences I know you are going to say when they don't have their knowledge maps and they don't have their critique. Yes, but our section was running perfectly well before we had any knowledge maps and critique and we still went and did it. I am not saying that the section is perfect, there is always room for improvement. But when you hear and you see things going on you know that other sections aren't working like they should do. But there is no consequences because they don't do the activity. We should be the ones who are doing it mostly than anybody else. So what's the balance of the scales on that?

> **Comment:** Recognition

> **Comment:** Support

Interviewer:

So why do you think that has happened?

Interviewee:

Because some people are more responsible - some people want to take on what they see as a good tool, a good thing to do and he got everybody to buy-in to it. You know he was involved to say this is what we need to do, why we need to do it. Yeah okay so of the people who are not doing it - are they being disrespectful or what?

> **Comment:** Respect

Interviewer:

What do you think?

Interviewee:

I don't really know. I just know that it really pisses off my guys and if it pisses them off - it pisses me off. So I don't know how that's been addressed because there hasn't seemed to be any consequences and then they don't get involved. So is it the good children? Always doing what they are told - and they get on with it - and that's alright you know that fine - but the other ones can just like play truant.

Comment: Reward

Interviewer:

From your experience what would you say ?

Interviewee:

I'd say, 'You're not getting away with it'. So what's the point?

Comment: Reward

Interviewer:

Again from your experience, is there anything different with the way the kaizen activity has approached this and also should there be anything different?

Interviewee:

I think it highlighted the groups who are proactive and willing to take on a new initiative and they want to work well as a team and they want the company to do well. So they say that there is no other way to do it and they don't need help, but those teams and those groups who aren't doing it - is it because they are not bothered? Is it because they haven't got the - I don't know - the X factor. I don't know - is it because they can't see that it's an advantage and they are not bothered to come here and I do that, you know I am just happy to do that without wanting more or making their job better or how they work and they are not happy to work as a team.

Comment: Reward

Interviewer:

Are there any roles or elements of the methodogy which have made a difference in the groups?

Interviewee:

You see I think I'm quite lucky because we get on well as a team and because of the job that we do we have to work as a team anyway. We don't fail - we all have our responsibilities but we all have to come together at the end of the day. So a lot of the work, well the majority of the work that we do is always interactive between ourselves, like the knock on effect that people do. So we are used to working as a team, so mainly it has to be addressed at the more grass roots level. What do the people do on that team that makea them not want to interact with each other?

Comment: relationships

Interviewer:

I mean how can you get round that?

Interviewee:

It's up to the seniors - maybe its his role. I mean I worked somewhere years and years ago that this girl didn't like doing this particular job, so they never gave her that job to do. And that was totally unfair on other people. It's the same kind of thing, just because they don't like doing it does it mean alright ok don't bother doing it. I mean to get them to work would force them to work as team members so they are the ones who should be addressed more than the likes of us who go off.

Comment: Respect

Interviewer:

So why do you think that the groups which do work well together have been working well and the groups which haven't perhaps had a different way of working how to progress so well in this within the wider scope.

Interviewee:

I don't really know because I don't know that groups that well so I don't know.

Interviewer:

Why do you think that has been allowed to happen? More to the point - it happens because it happens.

Interviewee:

Maybe the pilots haven't been strong enough within that particular group. Maybe the senior hasn't backed the pilot up and told them to get off their backsides. Maybe the senior hasn't set an example. Maybe the pilot is quite happy to just sit back and say well I can't get them in a room.

Comment: Support

Interviewer:

In that case, what's the remedy for that situation?

Interviewee:

Well again it was an initiative that the managers all got into, so it's the manager held responsible and it should be knocked back down the line. I mean that's what the chain of command is there for - isn't it?

Comment: Support

Interviewer:

That can't be denied. Certainly. Okay that's some good feedback as well.

Going back to rolling out the rest of the company, and say we're piloting in any which is Simon [Enston's] area, indirect area, very similar to doing it in PDS but also looking at rolling out to ….

Interviewee:

So you are giving them a half-baked recipe. I wouldn't want anybody to buy my recipe if I wasn't sure that the cake would turn out at the end.

Comment: Relationships

Interviewer:

So no half-baked recipes?

Interviewee:

No.

Interviewer:

Going back to the way your attitude has changed, the critical point within the levelling stage, should this [point be] let down. Looking towards throwing it out to the rest of the company, again what recommendations do you have with your experience?

Interviewee:

I don't.

Interviewer:

Is that don't in its current form?

Interviewee:

Don't in its current form. Don't until you know how the recipe comes out in the end. I mean if you buy a car - you buy it with an engine that goes.

Comment: Trust

Interviewer:

Hopefully.

Interviewee:

If you've got a warranty haven't you, I mean you couldn't have a car without any warranty because you don't know how it's going to turn out. I think that needs to be addressed.

Interviewer:

If you could describe that as a single recommendation or a group of recommendations, what would they be? Think of bullet points. I only have to fit this all into a presentation. I'm just condensing a lot of feedback but what will come out of it are bullet points and probably little snippets of what people have said - and not with any names. There will be little verbatims because we want to show that we've gone out.

Interviewee:

Clear direction. Clear the haze and the fog. It's got to be clear direction. I mean it's all right for us here because we're all in PDS so we can come over and see all about this, what about that? Have a bit more than [goals]. You know I'll find this and that and what's happened there. That's all right because it's in you own family kind of thing isn't it? But once you take it here extended relatives.   **Comment:** Safety

Interviewer:

Uncle Bertie.

Interviewee:

Yes.

Grumpy Uncle Bertie.

Interviewer:

I mean if you can forgive your family can't you, but you can't forgive your cousins and your second cousins kind of thing. For the integrity of knowledge management and or whoever and people who are selling it to them. It should be crystal clear how to do it and what the benefits are.   **Comment:** Safety

Interviewer:

How do we prove the benefits of that?

Interviewee:

You tell me because that's the way to find out.

Interviewer:

I can see the benefits from getting the feedback already.

Interviewee:

At first, we worked well as a team, all getting together and discuss the critique kind of thing. I mean we know we've got problems in areas and a lot of the problems are because usually the manager's hands are tied because they've got blocked by Japan. So you know Paul is not at fault that he can't take it further because it has gone to higher levels and bless him he has done as much as he can with regulations and this that and the other. You get it from most [indecipherable] constantly you know so I feel sorry for him having to [indecipherable]. So you know there are some things that are just facts of life that can't be changed.

<div style="float:right; border:1px solid red;">**Comment:** Support</div>

So you have to accept that as well that you can't turn back – you're Moses and parting water kind of thing - partly it's a culture thing as well – isn't it?

Interviewer:

Base metal into gold.

Interviewee:

You have to beam me in a stick.

Interviewer:

Well hopefully from the experiences of the pilot, we can look at things both from the point of being realistic, knowing what we can do. What essentially is there as the methodology. I think its fairly robust but there are all these different questions. One of the biggest questions I think you know coming back to what you were saying is when you're depending then on a higher level - if that direction is firm - like from the very beginning - it was good because it was okay. Tuesday mornings – that's it – it's kaizen and it was kind of a like bit of a shock it was almost like [feeding through your cost downs] but now it will be done.

Problems exists when due to the various factors and this might be when the realism kicks in. What do you do if you don't get that higher level buy-in? How does that affect the people who are doing it? Four hours a week or more, every week, and have a kaizen pilot of sufficient strength that they can push people into a room and say okay you can get on with this, because unless the kaizen pilot is of that higher level, if the kaizen pilot is one of the team themselves, then their position is exactly the same as every other member of the team. Like yourself, you do tend to think well you know I've spent X amount of hours on this and dragged other people into it, despite their complaints, I can remember sitting with people and them saying 'No this is not just another initiative'. We have Dave Waddle's assertion that this will be done and perhaps there were key moments when that's necessary to reinforce. I think the beginning is very important, I have to sit with Mandy Lee who was very very sceptical immediately and I said no. Dave Waddle said it will be done and if you have any problems with it or anything else you go to your manager and talk to them because they have been told by Dave Waddle to do this to make sure that it's done and my understanding – and it undermined my position – as it slowly began to appear there wasn't this top level buy-in or of the exactly the same kind.

Interviewee:

It was diluted in some corner.

Interviewer:

Yes. I was saying – no - it is from the very top. You will not be penalised for taking four hours of a Tuesday morning out, it's been decreed that this will be done and supported by managers and if managers don't support it they will have to answer again to Dave Waddle. His position – his immovable position – is like – I'm trying to remember who described to this keystone. If you pull it out the whole thing falls down but if it is there and strong, the thing just stays there – it's going to work.

From what you have been saying it's not the first time I've heard it, you know it's one of those key things because we have to be able to sit there and say I've listened to your complaints, I understand completely because you've had other things which have fallen by the way side and been disappointed before. This time you won't be disappointed because it's coming from the top, and from the top to the manager's firm direction. It looks as if it's going to be at this levelling stage throughout and where it slowly needs to be tidied up.

Interviewee:

People have to be realistic that it's not a cornucopia. It's not going to solve all the problems, it's not going to be novana and all of this but if it can help sort out some of the problems – it's worth it. But the other problems you've got to be realistic because of the culture, because of Japan, you know, that you have to be realistic.

> **Comment:** Trust

Interviewer:

I think part of the process of looking at all of the problems, including the unrealistic ones, and identifying them, actually helps as well because you can then identify them and say there is not much we can do about that, but it exists and it's actually recorded there somewhere. It might be recorded as a lost cause or a hopeless case but somewhere or other you could actually go back and look at that and if it has a significant affect on productivity or whatever somewhere down the line, yes, it might come up as an issue. If suddenly the cosmos changed then perhaps ….

Interviewee:

Yes. You could readdress it in a different ways. I think what you were saying before how to sell it to designers or customers – they've got to have examples, real examples, which we do not have. It's all theory – you see all these adverts on telly and they sell it to you and this, that and the other – there's no example of what it has done for one subsection or section in PDS. Because it's hit this stone wall.

> **Comment:** Respect

Interviewer:

Right.   Again, that's been brought up, other people have said that.   We need a case study, a success story.   Success stories sell things.   Your marathon runner wins the marathon and you start wearing Nike shoes.   Core blimey, I will have to get a pair of those because they won the marathon.   That kind of thing.

Okay, I will let you go now.

Interviewee:

Thank you.

Appendix 4: Tech Detail Chart

Oct. 1st, 2006

< Metallic materials and ceramics >

Senior Manager | Keizou Otani |

Manager | Hirotaka Chiba | Surface modification

Manager | Hiroki Sakamoto | Magnetic materials

Precision assembling

Manager | Yoshiteru Yasuda | Tribology

Manager | Hiroshi Sakurai | Plasticity and strength analysis

*Manager | Hiroki Sakamoto | Functional Structual materials

Senior Engineer | Minoru Ota | Precision machining

Senior Engineer | Munekatsu Shimada | Nanoamorphous materials

Senior Engineer | Akira Okada | Functional Ceramics

Responsible for Technical Detail

Appendix 5: Interview with Japanese NTCE seniors

NTCE Japanese Seniors Design Review I Planning Drawing Mindset Meeting

Date / Time: January 17th 2005, 15:00 − 17:00
Location: NTCE Cranfield Phase 1, M501
Attendees: N. Amano DKR, T. Aizawa DKS, T. Tani DKL, Y. Sewaki DKP,
G. Sato DKT, M. Takeuchi VEE, Y. Tsuchiya VEE, M. Loader VY1.

Objective:
The meeting was held as a semi-structured discussion, guided with a rough set of questions prepared by Dave Rymell / Matt Loader:

1. How were you first introduced to DR's I Planning DWG's?

2. What are the major differences between DR's I PD's held in NTCE and NTC? Why do you think these differences exist?

3. How do you prepare mentally before you attend a Design Review I Planning DWG. meeting?

4. What are the most important things that you teach a new engineer about DR's / PD's?

5. What is a Design Engineer's role in a Design Review?

6. How do you judge when someone is capable of running a DR, and what qualities do they need (and at what level)?

7. Can you give examples of good leaders of DR (like Takahashi-san)? What makes them good DR meeting leaders?

In response to this set of questions (sent as a guide), Amano-san arranged the attendees and sent an introductory letter as follows:

VY1のマット・ローダーさんのグループで、NTCEにおけるデザインレビュー活動の改善
について検討を行っています。（計画図の改善活動もこれに含まれます。）
この活動はカンパニー・オブジェクティブに含まれており、花岡さんからも積極的に
推進するように指示が出ているそうです。

NTCEでは、P32Lでデザインレビュー活動を進めていますが、質の高いレビューが
できているとはまだまだいえない状況です。

そこで、今まで、いろいろなDRを経験されてきた日本人スタッフのみなさんに集まって頂き、
なぜ、NTCEではDRがうまくできないのか？　今後どうすればDRをきちんと実施できるか？

について普段、感じていらっしゃる本音のところをざっくばらんにお話して頂けませんでしょうか？

例えば、
「NTCではDRの資料を作るのにもっと時間をかけているよ！」
「レビュアの質問がもっと厳しいよ！部DRなんて言ったら、もう大変。」
「フォローアップが全然、甘いんじゃないの？」などなど...

なかなか英語では伝えづらいニュアンスもあると思うので、会議は日本語でやります。
討論会にはマットさんが参加してくれます。
議論の中から今後の改善のヒントを少しでも多く吸収したいというのが彼らの期待値です。

マットさんには翻訳等でお世話になった方も多いと思いますので、恩返しの意味もこめて、
是非、協力してあげてください。

天野は今回、ひょんなことから、この活動のお手伝いをさせて頂くことになりました。
お忙しいところ恐縮ですが、よろしくお願い致します。

ENGLISH TRANSLATION
VY1 Matt Loader's group are carrying out a study into activities to improve DR's carried out at NTCE (improvement activities for Planning DWG too). These activities are included in the company objectives, and I have received a strong directive from Hanaoka-san to promote the activities.

Although DR activities are being carried out for P32L at NTCE, we can't really say yet that we can carry out high quality DR's.

So, I'm gathering a selection of Japanese staff who have experience of doing DR's to consider the questions: 'Why can't we do good DR at NTCE?' How can we do DR's properly from now on? I hope you can join to share your comments and ideas- why not come and give your opinions?

For example: 'More time is taken in preparing materials for DR in NTC!', 'The reviewer's questions are trickier!', 'Divisional DR's are tougher....!', 'Isn't it easy- there is no follow-up!' etc...

I guess it's difficult to explain in detail in English, so the meeting will be held in Japanese. Matt Loader will attend at the meeting.
Matt has helped us out a lot with translations etc. so please let's reciprocate by supporting this activity.

I have been asked out of the blue to support this activity- I know everyone's busy, but please help out.

Meeting Minutes (N.Amano).

自己紹介から Personal Introductions

DRは緊張するもの　Design Reviews create a sense of tension / nervousness

トヨタのDRは凄く厳しい。　DR's at Toyota are extremely tough (ML: Sato gave a quite interesting impression of a very short, quite old SME reviewer (at SVP level- the point here being that the DR was considered to be so important that very high level reviewers were involved) who used sharp jabs with his elbows to emphasise his 'interrogation' of DR attendees)

日本でも部品ごとに温度差がある。Even in Japan, differences in DR severity exist dependent on the parts....

エアバッグシステムのDRは厳しかった。　The airbag system DR was very severe.

日本でやっていた車体のDRでは各エンジニアが真剣に出席する。　In a Body DR carried out in Japan, each engineer takes attendance very seriously.

自分の部品がきちんと検討されているかを確認するために。　This is to ensure that your own parts have been examined to the necessary level (ML: this response begins to illustrate the high sense of personal responsibility felt by the Japanese engineer).

これをオーガナイズするのはかなり大変だった。　This involves a lot of work to organise.

でも、NTCEに来てからは残念ながら、この緊張感は味わえていない。　However, unfortunately after coming to NTCE, this feeling of tension / nervousness was not present.

こちらでは、みんな、お茶を濁す。議事録を提出して終わり。Here, everyone avoided the awkward issue. Amano-san avoided taking direct notes. (ML: This point made everyone nervous of being seen to criticise directly, although the feeling was obviously shared by all).

日本では技術的に経験のある主管レベルのサインが入って初めてDRを完了することができる。
In Japan, the DR can be signed off and completed by a technically experienced Shusa level manager.

VEE Example

ガソリンえんじんの性能適合性実験をやっている。Testing is done on suitability of petrol engine performance.
エンジンのパラメータ 5000個にも及ぶ。There are as many as 5,000 engine (performance) parameters.

そのデータを決定するのは実験の仕事。　The work in testing is to decide on / choose this data

本当にそのパラメータ設定でいいのか？世に出せるのか？をDRで議論する。 Are these parameters correct? Should we propose those parameters?- these are the issues discussed in the DR

データひとつひとつについて、性能への跳ね返り、裏づけデータをレビュアからチクチク聞かれる。 What are the repercussions of the data on the performance..... the reviewer scrupulously interrogates the background data.

レビュアは総括クラス。　　The reviewer is Japanese Senior (Sokatsu) level.

OBDの立上りの時は3000個のデータを1個1個検証した。7～8時間かかった。 At the meeting for OBD, 3,000 items of data were verified one by one.... This took 7-8 hours...

一番厳しいプロのBでチェックしなければならない。

The checking must be done by the toughest SME available. (ML: this was a straightforward description of how the Engine DR was carried out- the VEE staff outlined the enormous data collection task and the necessity for careful checking. Again, the impression was very much of 'professionals' taking pride in doing a job thoroughly. At no stage was reference made to use of written procedures / standards.).

提案する側とチェックする側をきちんと分けなければならない。　The proposing side and checking side must be strictly separated.

でないと泥棒と警察が一緒ということになりかねない。　　If this is not done, 'thief' and 'policeman' would become the same.... (ML: There was an impression of avoidance of the implications (possible accusations) of collusion in the DR process- an 'us and them' attitude, together with an element of fear (present within NTC Japan DR's, more acute in the case of Sato's memories of Toyota DR's) is considered necessary for successful DR)

サプライアからのDRをレビュー。　Review of DR from suppliers.

エンジン部隊にはU00　品質監査グループがいて、そこがレビューを行う。U01大城技師長のグループ。 In the Engine division there is a quality monitoring group, and the reviews are carried out there. This is Mr Ooki's (Engineering Director) group

図面のレビュー。　　Drawing review

フェイズ・レビュー。　Phase review

レビューをお願いする。レビューが通らないと次工程に進めないから。　A review is requested. If the review is not passed, you cannot proceed to the next process.

特に変更点については細かくチェックされる。　　In particular, detailed checking is carried out on changed points / items.

OKの場合は何をもって流用といえるのか？を説明する必要あり。 If the result is OK, it is necessary to explain what is needed to pass the review.

NGの場合はどこからNGが分かったか？机上FTAか、実験結果からか？　　If NG, from what can you understand that it is NG? Is this from an FTA carried out at the desk, or from test results?

NG項目があっても、アクションプランが明確になっていればよい。

新人時代、DRについてどんな教育を受けましたか？ What kind of DR training did you receive as freshmen?

教育なんって全くなし。（全員一致） None at all…. (unanimous response).

先輩からDRをやるから資料を作れと言われた。 The engineers are told to prepare materials for DR by the older engineers in their group.

分からないながら、自分なりに一生懸命資料を作った。後で、ボロボロに直された。 While not fully understanding, they work hard to prepare the materials. After that, they were corrected / revised.
それを繰り返すうちに、なんとなく勘所を掴んでいった感じ。　　　 By repeating this, eventually they feel that they have got the point of it.

トヨタのDRの中で役員DRというものがある。鈴木さんというSVPがレビュア。小柄なおじいちゃん。Among Toyota DR there is an 'executive DR'. The reviewer's name was Suzuki- an SVP, he was a little old man.

このDRのためにはものすごく準備をしなければならない。一面の壁に図面、検討資料を貼る。
An extremely large amount of work was done in preparation for the DR- one whole wall was covered in drawings and study materials.
どういう風に設計したか3〜4日かけて資料を作る。　　 3 to 4 days were spent in creating the materials to cover any questions on how the design was made.
事前レビューももちろんある。設計が下手だと怒られる。 Of course, there was a pre-review meeting, there was a fear of the design being considered inferior.

日産ではマネージャーはテクニカルなトップではじゃないことがある。　　 There are cases where in Nissan the managers are not at the top level technically.

トヨタは必ず、主査が質問をしてくる。　　 At Toyota the Shusa level always carried out the questioning.
課長→主査→部長　　　　 The hierarchy was Sec. Mgr. -> Shusa -> Dept. Mgr.

主査はある特定分野の技術畑で経験を積んできた生え抜きの技術者。 The Shusa was a born & bred engineer who had accumulated experience withion a particular specialist area of technology.

日産はそうじゃない。 In Nissan this is not the case.

NTCEのマネージャーはテクニカルな経験が少ない。　　 The managers in NTCE have little technical experience.
開発車両の数からして日本に対しては不利と言わざるを得ない。 It has to be said that the disadvantage is the number of vehicles developed (in NTCE) compared to those in Japan.

レビュアがプロじゃない。　　 Reviewers are not 'pro's'

上の人（レビュア）がしっかりしていないとDRにならない。 If the reviewers are not reliable, it will not be a proper DR

報告書の文化。   'Report' culture

自分より1つ上の立場でモノを考えなさいと常に教育されてきた。You are always trained to consider the standpoint of someone one step up from yourself. 報告書のチェックのやり取りの中で上司の視点を少しずつ学んでいった。   Part of the checking of reports is to learn bit by bit the viewpoint of your boss / supervisor.

DRのために勉強するのではない。 It is not necessary to study for DR's (ML assumption is that by doing your job well you will be prepared for DR?)

自分の技術レベルを高める場。   Standpoint ('ba') of raising your own technical level.

正しい設計ができている理由を証明する場。   Standpoint ('ba') of being able to prove the reason why the design has been carried out correctly.

NTCEでは「DR」という言葉の重みが軽い。   The word 'DR' carries little weight in NTCE.

Additional Comments (ML)

1. Firstly, the attendees were asked to give a brief introduction, including their experience within the company. The attendees all had over 10 years experience in the company- Gen Sato was an exception: he had only been in the company for 3 years, but he had 10 years' experience in Toyota, a point that became important as the discussion on DR's developed.
2. The ability to carry out a DR does not seem to be abstracted from the ability to do their regular jobs. Training is OTJ and involves being thrown in at the deep end when asked to prepare DR materials. Successive rewriting of the required materials enables the engineer to understand the requirements of the DR. Discussion after the meeting with Sewaki-san and Amano-san revealed an awareness that there is a different level of responsibility assumed by the NTC engineers and local staff. The NTC engineers sent to NTCE are all surprised at the attitudes of the local staff. After initial surprise, the engineers become resigned to the situation.
3. An element of fear seems to be important in assuring the success of DR (perhaps similar to an old fashioned fear of financial auditors?). Amano-san believes that this cannot be replicated in NTCE because there is a lack of depth to the perception of responsibility for one's work.

Appendix 6

Organisation Chart of NTCE (Nissan Technical Centre Europe: Integrated European R&D Function)